

PROCEEDINGS OF THE MUSICAL ASSOCIATION

Musical Association (Great
Britain), ...





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PROCEEDINGS
OF THE
MUSICAL ASSOCIATION

FOURTH SESSION, 1877-78

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PROCEEDINGS
OF THE
MUSICAL ASSOCIATION

FOR THE INVESTIGATION AND
DISCUSSION OF SUBJECTS CONNECTED WITH THE
ART AND SCIENCE OF MUSIC

FOUNDED MAY 22, 1874

FOURTH Session, 1877-78

LONDON
STANLEY LUGG, WHEELER, & CO., 44 NEW BOND STREET, W.
1878

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RULES AND REGULATIONS

*Passed at Two Special General Meetings of the Members, held at
27 Harley Street, W., on February 7 and April 3, 1876.*

OBJECTS AND CONSTITUTION.

THIS ASSOCIATION is called the Medical Association, and is formed for the investigation and discussion of subjects connected with the Art, Science, and History of Medicine; and is intended to be similar in its organisation to existing Learned Societies.

It is not intended that the Association shall give concerts, or undertake any publications other than those of their own Proceedings, or the Papers read at their meetings.

MEMBERS.

The Association shall consist of practical and theoretical physicians, as well as those whose researches have been directed to the science of anatomy, the history of the art, or other kindred subjects.

Any person desirous of being admitted into the Association must be proposed by two members.

Elections will take place by ballot of the members present at any of the ordinary meetings, and one adverse vote in four shall exclude.

No newly elected member shall be entitled to attend the meetings until the annual subscription be paid.

SUBSCRIPTION.

The annual subscription to the Association is one guinea, which shall become due on the first of November in each year.

Should members desire to withdraw from the Association, they should give notice to the Hon. Sec. on or before the 31st of October.

METTINGS.

An ordinary meeting shall be held on the first Monday in every month, from November to June inclusive, at 3 p.m., when, after the dispatch of ordinary business, Papers will be read and discussed.

An annual general meeting of members only shall be held at 4 p.m. on the last Monday in October, to receive and deliberate on the Report of the Council, and to elect the Council and officers for the ensuing year.

Special general meetings may be summoned whenever the Council may consider it necessary; and they shall be at all times bound to do so on receiving a requisition in writing from five members, specifying the nature of the business to be transacted. At least one week's notice of such special meeting shall be given by circular to every member, and ten members present at any general meeting shall constitute a quorum.

Every member shall have the privilege of introducing one notice at the ordinary meetings, on writing the same in a book provided for that purpose, or sending a written order.

COMMUNICATIONS.

Papers proposed to be read at the meetings may treat of any subject connected with the Art, Science, or History of Music, Acoustics, and other kindred subjects.

Papers will be received from or through any member of the Association.

Experiments and performances may be introduced, when limited to the illustration of the Paper read.

All communications read will become therewith the property of the Association (unless there shall have been some previous arrangements to the contrary), and the Council may publish the same in any way and at any time they may think proper.

REPORTS.

A Report of the proceedings of the Association, including the Papers read or abstracts of the same, and abstracts of the Discussions, shall be printed and distributed to the members as soon as possible after the end of each session.

This Report will be arranged and edited by the Honorary Secretary, under the direction of the Council.

COUNCIL AND OFFICERS.

The management of the affairs of the Association shall be vested in a Council, to be elected by ballot at the general meeting of the members on the last Monday in October.

The Council shall consist of a *President*, *Vice-Presidents*, and ten *ordinary members* of the Association.

The *President*, *Vice-Presidents*, *Auditors*, and five *ordinary members* of the Council shall retire every year, but shall be eligible for re-election.

At the annual general meeting in October, the Council shall present a balloting list, showing the names of the persons whom they propose for the offices of *President*, *Vice-Presidents*, and *ordinary members* of Council for the ensuing year. A copy of this list shall be given to each member present.

In voting, each member may erase any name or names from the balloting list, and may substitute the name or names of any other person or persons whom he considers eligible for each respective office; but the number of names on the list, after such erasures or substitutions, must not exceed the number to be elected to the respective offices as above enumerated. Those lists which do not accord with these directions shall be rejected.

The *Chairman* of the meeting shall cause the balloting papers to be collected, and after they have been examined by himself and two scrutineers, to be appointed by the members, he shall report to the meeting the result of each examination, and shall then destroy the balloting papers. *Auditors* shall be appointed at the annual general meeting by the members, and the statement of accounts shall be sent by the *Treasurer* to the auditors, and be submitted by them to the *Secretary* in time to enable the Council to judge of the prospects of the Association, and to prepare their report in accordance therewith.

The Council and officers shall meet as often as the business of the Association may require, and at every meeting three members of Council shall constitute a quorum.

ENACTMENT OR ALTERATION OF RULES AND REGULATIONS.

No rules and regulations can be enacted, altered, or rescinded, except at a special meeting of members summoned for the express purpose, the summons stating distinctly and fully the matter to be brought under consideration.

Medical Association

FOR THE INFORMATION AND DISCUSSION OF SUBJECTS
CONNECTED WITH THE ART AND SCIENCE OF MEDICINE.

FOUNDED MAY 29, 1874.

COUNCIL.

PRESIDENT.

CHURCH, The Rev. Sir FRANCIS A. CORN. Bart. M.A., M.D., D.O. Oxon.,
Prof. Med. Univ. Oxon.

VICE-PRESIDENTS.

CROFTS, WILLIAM, Esq., F.R.S.

COLLINGSWOOD, OTTO, Esq.

CHURCH, GEORGE, Esq., F.R.C.

BRIDGES, JOHN, Esq., LL.D., Hon. Mem. Acad. St. Carlos, Rome.

MARSHALL, GEORGE ALFRED, Esq., M.A., M.D., D.O. Cantab., Prof. Med.
Gresham, Principal of the Royal Academy of Music.

CHURCH, GEORGE ALFRED, Esq.

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THOMAS, JOHN, Esq., F.R.S., LL.D., Sec. Soc.

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BRIDGES, CHAS. A., Esq., M.A.

BRIDGES, JAMES, Esq.

BRIDGES, E. H. M., Esq., M.A., F.R.S., F.C.S.

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CHURCH, W. H., Esq., Prof. King's Coll.

CHURCH, J. H. D., Esq., M.A.

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Hon. R.A.M.

CHURCH, GEORGE EDWARD, Esq., Hon. R.A.M.

TREASURER

CHURCH, JOHN, Esq., 14 New Broad Street, W.

AUDITORS

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CHURCH, MARSHALL, Esq., F.R.S.

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JAMES BROWN, Esq., M.D., D.O. Oxon., 5 Dorset Square, W.C.

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 brid., Organist Professor
 Ziemerstein, Miss Agnes

THIRD SESSION, 1876-7.

THE ANNUAL GENERAL MEETING of the Musical Association was held at No. 29 Harley Street, Cavendish Square, on Monday, 22nd October 1877.

In the Chair:

Professor GEORGE ALEXANDER MACDONALD,

Mrs D. Currah, Prof. Miss Usher Currah, Principals of the Royal Academy of Music; Vice-President of the Association.

The following

REPORT OF THE COUNCIL,

Was read by CHARLES MACDONALD, Esq., F.R.S., for the Honorary Secretary, CHARLES K. BALLMAN, Esq.

THE THIRD SESSION of the Musical Association ends this day.

Your Council have, therefore, the pleasure to present to you their third Annual Report.

It will be seen from the subjoined arrangements for the past session, and also from the third volume of the Association's Proceedings, which has been forwarded to all the members, that many papers on practical subjects, interesting to musicians, have been read and discussed at the usual eight ordinary monthly meetings, as well as papers relating to the science of music.

The following were the Special arrangements for 1876-77:—

First Meeting.—Monday, November 6, 1876. Paper by Alex. J. Ellis, Esq., F.R.S., 'On the Semioticness of the Ear to Pitch and Change of Pitch in Music.'

Second Meeting.—Monday, December 4. Paper by W. H. Cummings, Esq., 'On Henry Purcell and his Family.'

Third Meeting.—Monday, February 5, 1877. Paper by James Hogg, Esq., Mus. Doc. Oxon., 'On John Sebastian Bach's Art of Fugue.'

Fourth Meeting.—Monday, March 5. Paper by William Paley, Esq., Mus. Doc. Oxon., F.R.S., 'On the Philology of Harmony.'

Fifth Meeting.—Monday, April 2. Paper by W. A. Barwick, Esq., Mus. Doc. Oxon., 'On Music in Cathedrals.'

Sixth Meeting.—Monday, May 7. Paper by Stephen S. Stanton, Esq., 'On the Gymnastic Training of the Hand for Performing upon Keyed Instruments.'

Seventh Meeting.—Monday, June 4. Paper by Charles E. Salmons, Esq., Hon. Mem. Acad. St. Cecilia, Rome, 'On the English Language as a Language for Music.'

Eighth Meeting.—Monday, July 2. Paper by H. Banatti, Esq., F.C.S., 'On Improvements in Trampets,' illustrated by his 'Telephonic Trumpet.'

Paper by H. H. M. Bennequet, Esq., M.A., F.R.A.S., F.C.S., 'On Some Points in the Harmony of Perfect Consonances, illustrated by his *Mathematical Harmonicon*.'

Your Council observe with regret that only a few of the members, and those usually the same, take part in the discussions upon the papers read at the meetings; and this fact has been the subject of unfavourable comments outside of the Association. Your Council therefore hope that the members generally will show more activity in this respect for the future; and also that papers will be more freely offered for the coming session, as to which it may once more be mentioned that short papers on subjects precluding discussion will be very welcome; and a glance at the list will show that there are many members fully capable of contributing such papers.

The accounts have been audited by Messrs. W. H. Cantwanger and Charles Edward Stephens. The balance-sheet lies upon the table for inspection. It shows that, after paying all expenses, there is a balance in favour of the Association.

In order to effect the objects the Council are obliged to incur liabilities at the commencement of each session, and consequently it is essential that they should be able to rely upon the punctual payment of the members' subscriptions. It is therefore to be regretted that (probably through forgetfulness) so many subscriptions yet remain unpaid; that not only are the Council hampered in the management, but also the Association is put to the additional expense of paying a commission to a collector; and even his efforts are not invariably crowned with the success they deserve.

Your Council feel the deepest regret in having to announce the retirement of a most valuable and efficient officer, namely, the Hon. Secretary, Mr. Charles E. Salmons, who has been indefatigable in the discharge of his duties since the formation of the Society, which, if originally projected by others, was nevertheless consolidated and launched into active existence by his exertions and energy.

As the chief reason for Mr. Salmons's retirement is a fear that the duties may overtax his health, the Council feel that they cannot do otherwise than reluctantly accept his resignation, hoping he may be able long to occupy his present honoured place in his profession.

It will be the first duty of the New Council you are about to elect to consider the choice of an Honorary Secretary.

The Council further regret to be obliged to announce the resignation of another valued and respected officer, Mr. Arthur Chappell, who has so kindly hitherto acted as Treasurer.

They, however, consider themselves fortunate in having obtained the consent of Mr. Stanley Looms to be nominated as Mr. Chappell's successor in the office of Treasurer, and they submit his name to the meeting in full confidence that the members will appreciate their good fortune.

By the Rules of the Association the President, Vice-Presidents, Auditors, and five ordinary Members of the Council are to retire each year; but all, or any of them, are eligible for re-election. The vacancies thus created will have to be filled up in accordance with the regulations in that behalf.

It is thought very desirable that new blood should be from time to time infused into the management of the Association, and that members of eminence in the medical profession, as well as distinguished amateurs, who have not hitherto taken part in the direction of its affairs, should be invited to do so.

For this reason it is proposed this year that the following new names should be added to the managing Council, namely:—

Dr. HENRY HALL.
Mr. W. A. HENRY, M.D.
Mr. H. R. M. BOWEN, M.A., F.R.S., &c. &c.
Mr. C. A. HART, M.A.
Mr. JOE BARNETT.
Mr. W. H. CHURCH.
Mr. CHAS. ED. SCOTT.

To make room for these, several of the present ordinary members of the Council will retire upon the list of Vice-Presidents, so that they will remain as *ex-officio* members of the Governing body, and the experience they have gained in the affairs of the Association will be still available.

A talking list, in accordance with this arrangement, will be put into your hands.

Capt. ALBERT HENRY moved, and the Rev. JOHN TUCKER seconded the motion, that the Report of the Council be adopted and returned upon the minutes.

The Chairman said that members were at liberty to make any observations upon any part of the Report. He thought that they must all be grateful to the Council for having presented to them such a very complete summary of the year's proceedings, and also for their services during the past session. If no comments were made, he would put the resolution to the meeting.

The resolution was then unanimously passed.

The Chairman said that the next business was the election of a President, the Vice-Presidents, the number of whom was un-

lected, and ten ordinary Members of the Council for the forthcoming session. They had the balloting list before them. He thought it would be better to elect the President separately, and not go to the ballot in that case. They were all familiar with the position of the Rev. Sir Frederick Ouseley, and the high services which he had rendered to music, and he would therefore propose that they should re-elect him President of the Musical Association by a show of hands. He (the Chairman) would add that at that meeting lady members had the special privilege of voting. This was denied them in some other institutions, and he was sure that it would not be the less acceptable to Sir Frederick Ouseley to learn that the ladies had concurred in his re-election.

The Rev. Sir Frederick A. Gore Ouseley, Bart., Mus. Doc., Professor of Music at the University of Oxford, was then unanimously re-elected President of the Association, having been proposed and seconded by the Rev. John Troutbeck, and the Rev. T. Holman.

The Chairman said that the next proceeding would be the election of the Vice-Presidents and the ordinary members of Council. The names of the gentlemen proposed for election were before them. Any name might be crossed from the balloting list and another name might be substituted for it, but the number of names must not exceed the number of officers to be elected.

Captain Alfred Norton and Mr. H. C. Bamalier having been appointed scrutineers, announced that the following members had been unanimously elected Vice-Presidents and ordinary Members of Council:—Vice-Presidents: Wm. Chappell, Esq., F.R.S.; Geo. Goltzschmidt, Esq.; George Grove, Esq., D.C.L.; John Hulsh, Esq., LL.D., Hon. Mus. Acad. St. Cecilia, Rome; George A. Macbrera, Esq., Mus. D., Prof. Mus. Univ. Camb., Principal of the R.A. Music, George Alexander Osborne, Esq.; William Paley, Esq., F.R.S. L. and E., Mus. D. Oxon.; Charles Kensington Salmons, Esq., Hon. Mus. Acad. St. Cecilia, Rome; William Spottiswoode, Esq., M.A., D.C.L., LL.D., F.R.S.; W. H. Stone, Esq., M.A., F.R.C.P.; John Tyndall, Esq., F.R.S., LL.D. Ordinary Members of Council:—W. A. Barrett, Esq., Mus. Doc., Oxon.; G. A. Barry, Esq., M.A.; Joseph Bennett, Esq.; R. H. M. Boumquet, Esq., M.A., F.R.S. & S., B.C.S., &c.; J. F. Bridge, Esq., Mus. D. Oxon.; W. H. Cummings, Esq.; W. H. Monk, Esq., Prof. Mus. King's College; A. H. D. Foulding, Esq., M.A.; John Stainer, Esq., M.A., Mus. Doc. Oxon.; Charles E. Stephens, Esq.

The Honorary Secretary announced that Mr. S. Arthur Chappell had resigned the office of Treasurer, which he had held since the foundation of the Association, and that, in consequence of rebuilding their business premises, Messrs. Chappell & Co. had given up the agency of the Association, which consisted in receiving subscriptions and selling the volumes of Proceedings, which they had kindly done without any remuneration. Mr. Salmons added that he had proposed to Mr. Stanley Lucas to

undertake the office of Treasurer, thinking that that gentleman would perform its duties admirably, and that he would prove a considerable acquisition to the Association. Mr. Lucas had replied that if elected he would accept the office, and he, Mr. Salaman, therefore begged now to propose that Mr. Stanley Lucas be elected Treasurer of the Medical Association.

The Chairman said that before proceeding to the election of a new Treasurer he thought that they ought to make some acknowledgement of the past very valuable services of S. Arthur Chappell, Esq., their late Treasurer.

Mr. H. C. Salaman moved, and Dr. Barton seconded the resolution, "That a letter of thanks be sent to Mr. Arthur Chappell, and also to the firm of Messrs. Chappell & Co, for their kindness in having so efficiently discharged their respective offices during the past three years."

The resolution was passed unanimously.

Mr. Salaman having reported his motion that Stanley Lucas, Esq. should be elected Treasurer, Mr. W. H. Channing said that he knew Mr. Lucas intimately, and, from his connection with him at the Royal Society of Medicine, he had special opportunities of being acquainted with his fitness for the office; he had, therefore, much pleasure in seconding Mr. Salaman's nomination.

Mr. Stanley Lucas was then unanimously elected the Treasurer of the Association.

Mr. Salaman said that he was happy to be able to announce that seven candidates for membership—one lady and six gentlemen—duly nominated and seconded, desired election. He would mention specially one gentleman who resided far from London, viz. J. M. Hutchison, Esq., of Greenwich, because, although he would rarely if ever be able to attend the meetings of the Association, he yearned to become a member of it. Mr. Salaman added that he regretted much that many members, some holding high official positions as professors of music, had from time to time withdrawn their names, and of course their contributions to the funds of the Association, upon the plea that they can never attend its meetings. Mr. Salaman thought that this was not a fair and generous way of regarding the membership of a very valuable association of musicians. He ventured to think that a member should not expect or desire to receive a gift's worth out of his subscription. It would not be possible to carry out the important objects of the Association and to publish their annual volume of proceedings without sufficient funds. Members should not, therefore, retire from the Association because they cannot be present at its meetings. He was sure that the members of other learned societies do not withdraw from them when they find that they cannot give their attendance at their meetings. Mr. Salaman hoped that members would regard it as a distinction to be attached to the Medical Association, and that this consideration, together with the reception of the annual volume, got up with much trouble and expense, besides

the knowledge that his subscription to the funds of the Association conduces to a useful and honourable object with respect to musicists, may be deemed by all the members to be a sufficient return for their contribution, even should they be prevented from attending the meetings. Mr. Salaman would venture to remind members who reside far from the metropolis and those whose parents prevent them from leaving the various papers read, that they have the privilege of forwarding communications to the Association, which may be read and discussed in their absence.

The names of the following candidates were then read over, with the names of their proposers and seconders, and, in default of a ballot being called for, they were unanimously elected members of the Association, viz.: Joseph C. Bridge, Esq., B.A., Mus. Bac. Oxon., Organist of Chester Cathedral; F. E. Gidstone, Esq., Mus. Bac. Cantab.; John M. Hutchinson, Esq., Greenwich, S.E.; the Rev. A. S. Looney, M.A., Gloucester; Stanley Lewis, Esq., Treasurer of the Musical Association; W. de M. Sergison, Esq., Organist of St. Peter's, Eaton Square; Madame Viard-Louis.

The Hon. Secretary then announced that at the first ordinary monthly meeting of the fourth session, to be held on Monday the 24th of November, at five o'clock, viz., William Chappell, Esq., F.R.S., would read a paper 'On the Influence and Use of Numbers in Practical Music.' Mr. Salaman said that they had now completed their third session, and he thought that the members might congratulate themselves as having done so, with the prospect of a long and prosperous future. With respect to his resignation of the office of Honorary Secretary, which he had held during the past three years, Mr. Salaman said that it grieved him to be obliged to retire from it, for he really loved the Association, having watched over its interests since its foundation. He disavowed, however, with regret, that he was no longer as young as he once was, and he found also that, with due regard to the preservation of his health, it was impossible for him to continue to perform so much work in addition to his ordinary professional engagements. He was sure that there must be many gentlemen belonging to the Association capable of performing the duties of Honorary Secretary, and he would be pleased if any one would volunteer. He had asked Mr. Charles Edward Stephens and Mr. Charles A. Barry to undertake the office, but they had declined it. He would now venture to suggest the name of Mr. W. H. Cummings, another member who possessed all the necessary qualifications for the office.

Mr. W. H. Cummings said that he had well thought over the matter, but he found that he could not possibly accept the proffered office. He was aware that his duties were very arduous to Mr. Salaman. The fact was that it required some gentleman with a considerable amount of leisure at his disposal. Before sitting down he must beg leave to add one word. Although the matter had been alluded to in the Council's report, they had not, as members of the Musical Association, returned their thanks to

the late Honorary Secretary, Mr. Charles K. Solomon, and he would therefore beg to propose the following resolution:—‘That the members of the Musical Association desire to express their deep obligation to Charles K. Solomon, Esq., for his great efforts on behalf of the Association, feeling, as they do, that its success has been mainly due to his personal and constant endeavours. They also express their extreme regret that his health and his other engagements will not permit him to continue his valuable services as Honorary Secretary.’ Those who had been constant in their attendance must have seen how regular and how serious Mr. Solomon had been in the discharge of the onerous duties he had undertaken. His labours had been very great, both before and after each meeting, and, for his own part, he begged to thank him very warmly.

The Rev. T. BARRETT had much pleasure in seconding the Resolution.

The Chairman said that everyone most cordially agreed with it.

Dr. JOHN HULLER said that he also concurred most warmly in the Resolution, having had considerable opportunities of witnessing the amount of work which their late Honorary Secretary had to do, and how very ably it had been done. Mr. Solomon said ‘he was not so young as he once was,’ but he (Dr. Huller) did not believe a word of it. Mr. Solomon’s courtesy, industry, and tact had been the same from first to last. Of course he did not wish to interfere with the motion which had been proposed, but he should like to ask Mr. Solomon whether they could not devise some means which would obviate the necessity of his retirement? The duties of the secretariats required not only knowledge of music and the musical world, but there was also a great amount of routine work, which was very tedious, and it struck him that they might induce Mr. Solomon to continue to give them the advantages of his services if they placed at his disposal a paid officer who would undertake the more mechanical part of the secretarial duties. Dr. Huller had no formal motion to propose, and he heartily participated in the Resolution just moved by Mr. QUAINANCE, if it became absolutely necessary to move it. He begged to put the question to Mr. Solomon, whether it would not be possible to furnish him with such assistance as would justify him in continuing in office?

The Rev. T. BARRETT suggested that this should be added as a rider to the Resolution.

The Chairman said there were two questions before the meeting: first, to make an acknowledgment to Mr. Solomon for the past, and next to make arrangements for the future. Whether Mr. Solomon might or might not be induced to adopt the course proposed by Dr. Huller, it was nevertheless their duty to thank him for what he had already done.

Mr. ORRIS GODFREY suggested that the latter part of the Resolution should be omitted. This was agreed to, and the Resolution, omitting the latter part, was unanimously passed.

Mr. SALAMAN said that he desired to thank the members very much for the kind expression of their thanks. He felt very proud of having gained their approval. He did not wish to share his successor, whoever he may be, but he could not disguise the fact that the secretariatship of the Medical Association involved much and continuous hard work. He had always received good assistance for the more clerical part of the office, such as addressing envelopes, holding prospectuses, summoning members to meetings, and in keeping the accounts. It was not that kind of work which troubled him: it was the constant anxiety he felt for the well working of the Association, which was now too much for him. Even if he were to have the regular assistance of a paid clerk it would not relieve him from the feeling of responsibility; it would, on the contrary, rather tend to increase it, because he would always be anxious to know if his assistant was doing his work well and punctually. He begged to assure the members that there was a great amount of thinking to be done in order to procure papers for the monthly meetings, and naturally a considerable amount of correspondence, which he could not trust to other hands than his own. It was, perhaps, unknown that there was hardly a paper read last year which had been obtained without his personal exertions. And the labour of getting the annual volume of Proceedings through the press was very great indeed. Every paper and every speech had to be submitted in proof to the writer and speaker, and this involved a large amount of work, and required great care and constant attention to details to avoid mistakes. Mr. Salaman added that his medical and other friends now insisted on his giving up the office of Honorary Secretary, seeing how his duties severely taxed his health and strength. He must, therefore, reluctantly decline to withdraw his resignation. He felt deeply the compliment paid to him by the members generally, and his thanks were specially due to Mr. Cummings, Professor Macfuer, and Dr. Hallak for their kind and flattering remarks. He would always be willing to assist his successor, if the result of his three years' experience was at any time called for, and he would also continue to perform the duties of the office until his successor was appointed, with the distinct understanding that he was only Honorary Secretary *pro tem.* Mr. Salaman had proposed to Mr. Pringlepat that he should accept the office, but he had not received his final decision. There was a difficulty about the day, which could not be changed, as it was a fundamental law of the Association that the meetings should be held on the first Monday of every month from November to June, at 5 o'clock, P.M.

Mr. W. H. OGDEN then moved the second part of this Resolution, viz., "That the members of the Association desire to express their extreme regret that the health of Mr. Salaman and his other engagements will not permit him to continue his valuable services as Honorary Secretary." This was seconded, and carried unanimously.

Mr. CHARLES MARSHALL suggested that it should be made known to members who live at a distance from London, that the Association would be very glad to receive papers from them even if they could not themselves attend to read them, and that some member resident in the metropolis would always be willing to undertake to read such papers. He himself would be pleased to do so at any time, and he promised to communicate with one of the gentlemen mentioned by the Honorary Secretary, who had retired from the Association, and try if he could not induce him to withdraw his resignation and also to contribute a paper.

The proceedings terminated with a unanimous vote of thanks to the Chairman.

SESSIONAL ARRANGEMENTS

FOR 1877-78.

*N.B.—The Choir is taken at 4.30 for preliminary business.
The Paper is read at 5 o'clock punctually.*

First Meeting.—Monday, November 5, 1877.

Paper by WILLIAM CHARTERIS, Esq., F.R.S., 'Music a Science of Numbers.'

Second Meeting.—Monday, December 3.

Paper by W. H. CHURTON, Esq., 'On the Formation of a National Musical Library.'

Third Meeting.—Monday, January 7, 1878.

Paper by J. SEYMOUR CHURTON, Esq., 'On the Laws of Musical Expression,' as formulated by H. Lussy in his *Traité de l'Expression Musicale*. (Illustrated on the Piano-forte.)

Fourth Meeting.—Monday, February 4.

1. Paper by the Rev. T. HILSON, M.A., 'Suggestions for a more expeditious mode of writing the Time notes in Music.'

2. Communication by D. J. BRANLEY, Esq., 'Regarding a point in the Theory of Brass Instruments.' (Illustrated.)

Fifth Meeting.—Monday, March 4.

Deferred Discussion on Paper by D. J. BRANLEY, Esq., 'Regarding a point in the Theory of Brass Instruments.'

Sixth Meeting.—Monday, April 1.

1. Paper by GEORGE SUMER, Esq., 'On the Gallo-Paris-Chord Method of Teaching considered as a Basis of Musical Education.'

2. Communication from ARTHUR HINA, Esq., B.E. (Queen's Coll., Ireland), 'On a Suggested Improvement in Staff Notation.' (Illustrated by Specimens.)

Seventh Meeting.—Monday, May 6.

Paper by ARTHUR KROHN, Esq., 'On a Practical Method for Reading Rhythmic.'

Eighth Meeting.—Monday, June 3.

Paper by CHAS. MACKENZIE, Esq., F.R.S., 'On the Present Cultivation of Sacred Music in England.'

such notes, for every aliquot part of its length, or such as will measure without any remainder, will be also a multiple of the vibrations of No. 1. Thus No. 2, the octave, is half the length and vibrates twice as fast as the whole string. No. 3, the so-called twelfth, or octave and fifth, is a third of the length of No. 1, and it vibrates three as fast. Then if we sound No. 3 with No. 2 instead of No. 1, we throw off the lower octave and have the fifth only, or 3 to 2. It is essential for consonance that the intervals should be aliquot parts of No. 1, for if otherwise, we should only create discord. The musical law is expressed very simply, that the number of vibrations is in inverse ratio to the length of a string.

The scale of all consonances is called the harmonic scale, copies of which are before you. It is exemplified by string or pipe. Let us consider, first, the *Molian* harp, on which the winds alone produce the consecutive sounds. The strings are tuned in unison, except the two extreme, one on each side, and those are covered with wire, and tuned an octave lower. When the wind blows quickly enough to sound the bass strings, which we will suppose to have been tuned to C in the bass clef, with 128 vibrations in a second of time, it is the whole string which sounds first, and the rapidity of the wind must be doubled before the harp will sound any change of note, and that note will be the octave above the first. It has already been said that the octave is produced by half the length of a string, and that it vibrates twice as fast as the whole—but mark the coincidence between music and consecutive numbers! As 1 and 2 have no intermediate figure, as they have no note between them, although the sound jumps from the whole length of the string to that of the half! When the bass strings sound the half length they have divided themselves into equal halves by a node, and that node creates tension in opposite directions; one vertical segment pulling as it were against the other. These well-known nodes may be easily seen by daylight, and at night by throwing a light upon the strings. They were shown at our first conversations in these rooms by Mr. Spiller, and at the Edinburgh meeting of the British Association by Mr. Ladd. The gust of wind which sounds the octave, or half length of the bass strings of the *Molian* harp, sounds at the same time the whole length of the gut strings because they are tuned to that pitch. Then, as the wind rises, subdivisions give on to both, with every multiple of 128 vibrations for the bass, and of 256 vibrations for the other strings.

The reason for tuning the *Molian* harp to a low pitch is, that the strings may be more easily acted upon by the wind. We need, particularly, of hanging one in a tree, but it requires a much stronger draught than it will get the next, except during a hurricane, when no one will care to go to listen. Our late honored Vice-President, Sir Charles Wheatstone, F.R.S., had a single violin string under a very draughty door, so an *Molian* harp, and he calculated the increase of draught caused by lighting a fire in the

room and by the opening of an outer door, by the rising pitch of the note. The variations produced by this string have been described as 'simultaneous sounds,' but they were purely consecutive. Any one may satisfy himself that it could only be so, by repeating the experiment with a good violin string. The change of note is simultaneous with the change of nodes in the string. Longitudinal undulations, or irregularities of vibration, will not change the note, but injure the quality of the tone. All the curves that a string may describe in vibration have been calculated by mathematicians, but only when nodes are formed do they effect a change of note in music.

Often here I experimented upon harmonics, or natural sounds, in former years, and have watched the changes of note, and have heard the simultaneous change of note. Such experiments may be tried by any one who has access to a harpsichord, or a very old grand pianoforte. The tension is too great in modern instruments to allow free play to the string. Remove the damper and strike one of the longest uncovered strings with a hard pianoforte hammer near the bridge. The changes follow in numerical order, 1, 2, 3, 4, 5, as in the scale before you, and the sounds succeed by octaves, fifth, fourth, major and minor third, harmonic seventh, to the third octave, and then to the major and minor tones. It is difficult to attain the highest of these numbers, but the harmonic seventh, No. 7, is readily distinguished by its unusual sound.

In the *Solfège* here the rising pitch of the sounds is caused by the increasing rapidity of the wind: but it is not so on a pianoforte. It is there due to gradual contractions of the string till it ceases to vibrate, and sinks to rest. The vibrations of a long string are widely discrepant, but they become gradually more and more contracted as the nodes of the strings diminish in length. The point to be remarked is that the sounds jump over intermediate diatonic—all are consonances—all aliquot parts: all the sounds are multiples of No. 1. It matters not whether it be wind, string or pipe: in each of them Nature teaches us the scale which is to resolve all musical doubts, all disputed chords. She indicates all the bases for musical intervals, the high numbers adapted only for melody, and the lowest for the most constant harmony.

To prove the same further, we may take an illustration from a pipe. It must not be from those which have lateral openings, or keys, because they shorten the column of air artificially, but from such instruments as the couch horn, or sounding horn, the so-called French horn (which is older than either the French or English nations), or the trumpet without valves.

The fundamental tone, No. 1, or lowest sound it can produce, is derived from the whole column of air within the tube. To produce No. 2 the rapidity of the breathing must be doubled, and then the column of air within the horn divides itself into two equal halves, and the sound is an octave above; so that, if the first note be lower C with 333 vibrations in a second of time, this treble C requires to be blown at the rate of 666 vibrations in pro-

duce 2. Here again we arrive at the identification of sounds with numbers; for just as there is no intermediate number between 1 and 2, so is there no intermediate sound between 1 and 2, the double in vibrations, produced by half its length, upon the horn. The numbers run both ways. The fractions as to length of tube are the corresponding multiples as to vibrations. Again, just as there is no intermediate number between 2 and 4 (the second octave), so is there one intermediate sound, and one only; it is No. 3, which is produced by a third of the length of the tube, and is the fifth above No. 2. The fifth and fourth divide the octave above the octave equally between them, so that the fifth is three times No. 1, and the fourth immediately above it is four times. This, notwithstanding the diminution of the musical interval. The names which we have adopted for musical intervals are usually calculated from the key-note, as from C to E a third, from C to F a fourth, and from C to G a fifth, but these names are not real quantities and are rather confusing than assistance. The octave is not an eighth but half, and the double octave is not a sixteenth, but a quarter of the length of No. 1, and vibrates four times as fast. Octaves are powers of 2; thus 2, 4, 8, 16, and 32 are successive octaves. But the octave 4 to 8 has only four sounds, and these are our major and minor third, and two others, divided by the harmonic seventh, which we do not use. From 8 to 16 are eight sounds, of which we use five, viz. C, D, E, G, and B, with the so-called diatonic semitones, from B to C. B is really the smallest of the eight tones, and not a semitone. The next octave is from 16 to 32, and that is all of semitones, while 32 to 64 is all of quarter-tones. After that, the octave is divided into eighths, sixteenths, and thirty-second parts of tones, among which B is only useful to note (and that only among musicians and mathematicians), that the so-called 'comma,' having the ratio of 80 to 81, is the eighth of a tone above the third of any key—as it is above E in the key of C. We have lately had mathematicians among us unskilled in musical notation, who have proposed to divide an octave into 'twelve equal semitones.' This is pure geometry and not music. In music there cannot be, even two, equal semitones within an octave. If our friends will only change their terms from twelve equal semitones into twelve equally tempered semitones, and give us their experience of the proposed sounds when heard with the ear (which means not to have yet been taken into account), we shall gladly profit ourselves of their research, on the grounds of modern expediency. In the meantime we must be content to leave the tempering of a scale in the hands of experienced practical men, who, judging only by their ear, as they always will, have hitherto satisfied our immediate requirements. Tempering may be allowed within certain limits without changing the consonance of the scale. That is proved by Wertheim's Resonating Tube, the piston of which may be moved until it arrives at another constant interval. It will not respond in any degree. Greater variation may be made in the less than in the

triple, where the intervals run closely together. Thus, an uncertain 32-foot C may be kept in tune by sounding the 16-foot pipe with it.

The interval of a fifth is 2 to 3 in ascending and 3 to 2 in descending; but as the figures are usually placed over the upper note in scales, the 3 is written above the 2, as in the scale in your hands, where it appears over G, referring to G as 2.

And now for the practical use of these figures; for although the harmonic scale can be referred to when necessary, they are very easily remembered. All young people are taught the difference between an octave, a fifth, a fourth, and a third upon the pianoforte, and it is only to associate the numbers with those intervals to find out the best bass, and every suitable bass.

All octaves are in the ratio of 2 to 1, whether it be 4 to 2, 8 to 4, or 16 to 8 in a second. All fifths are in the ratio of 3 to 2, all fourths in that of 4 to 3, all major thirds 5 to 4, and minor thirds 4 to 3.

For instance, in the key of C, from C to the F above it is a fourth, and F is No. 4; therefore the F, two octaves below, is the consonant bass, whereas, if we strike C with the C above, Chromas No. 4, and is the natural bass to that interval. The most consonant basses are always found in the lowest numbers, because the proportion of consonant vibrations is there greatest. Thus, from D to G is also a fourth, in the scale of G, but the numbers are 7 to 12, having a remote base in G, and there will be 12 vibrations of the one and 7 of the other, of which only two will coincide in every cycle—1 of the 12 with 1 of the 7. Thus, the proportion of non-coincidence will be as great as to make the bass unpleasant to the ear. But as 2 to 12 is in the ratio of 2 to 4, we have the best bass in these lowest numbers, and take G. By such various bases to intervals we modulate into other keys without the intervention of discord.

At the International Exhibition held at South Kensington in 1862, Mr. Bazin, the eminent inventor of Saxe Haras, exhibited an immense horn with an exceedingly long coil of tube, and perhaps standing six feet in height. When asked by the jury the object of this enormous size and length, he answered 'C'est pour jouer dans la disquette d'opéra'—'it is for playing in the fifth octave,' and he produced with facility any of the sixteen tones and semitones of that octave from it. Half the length of any open conical tube is expended upon the second note, the octave. No human power could have blown the low notes of that horn. Supposing it to have been tuned to the lowest C upon the pianoforte, with thirty-three vibrations in a second, as then the usual French pitch, it would have had 66, 132, 198, and 264 for its first, second, third, and fourth notes. Thus the fifth octave would commence on treble C, with 1056, and extend to C above the bass with 1686 vibrations in a second of time. It would then be within the power of the lungs. He wished only from the 15th to the 32nd part of his enormous tube, but it gave him the compass of the symphony.

This great coincidence of length is not necessary in a cylindrical stopped tube. It will take up its own octave according to the ratio of its length to its diameter. We have an example of this in a resonating tube invented by Sir Charles Wheatstone just fifty years ago. The lecture for which he invented it was afterwards reported in the twenty-fifth volume of the *Quarterly Journal of Science, Literature, and Art*, January to June 1828. Both he and I knew Kalenzstein, an accomplished musician, whose admirable skill in playing upon the Jew's harp was the inducing cause of that particular lecture. Kalenzstein had a peculiar facility for controlling and expanding the energy of his mouth, through the pliancy of his very thin cheeks and by the management of his tongue, so that he could fit them for any harmonic note within a certain compass. Wheatstone then gave the law, that a perfect harmonic scale might be drawn from a single tuning-fork, or from the vibrating tongue of the Jew's harp, by resonators adapted, or adapting themselves, to multiples of the original number of vibrations. "I took," said Sir Charles, "a tube, closed at one end by a movable piston, and placed before its end the beech [or pine] of a vibrating tuning-fork of the ordinary pitch—C. The length of the column of air [within the tube] was six inches. On diminishing the length of the column of air to three inches [by moving up the piston], the sound of the tuning fork was no longer reciprocated [in unison], but its octave was produced." "It is therefore evident from experiments," says he, "that a column of air may vibrate by reciprocation, not only with another body whose vibrations are isochronous [or in unison] with its own, but also when the number of its own vibrations is any multiple of the sounding body." Again he says: "No other sounds can be produced by reciprocation from a column of air but those which are perfectly identical with the multiplications of the original vibrations of the tuning-fork or the tongue of the Jew's harp." I produced his original tube in this room about two years ago, to check a recent theory—that resonators strengthened the ear, and answered only in vision, and Sir Charles ordered this to be made for me, by Mr. Green, under his own superintendence. The experiment is this, that the piston now works in a groove and is not liable to stick. Four octaves are produced from the tongue of one Jew's harp as rapidly as the piston can be moved up and down. There is no clurring between one sound and another, but clear jumps from one multiple to another, and every one of them may be created and heard by itself by checking the piston. But, although I am glad to produce this tube before those who were not present on the last occasion, and to do honour to the memory of our cautious Vice-President, who declined to refer in any way to himself, I have another motive also. This is a principle which has never been collared. We have had pipes stopped at the top, like the usual pitch-pipe, but they have been found too slow in action to be suitable for any other purpose. This is rapidly done, and

might easily be utilized for some such purpose as pedal pipes for an organ. The piston can be balanced outside to the greatest safety, and one such pipe will take the scale of C, and another that of F. The F pipe is required because F and A (as we take A for the sake of making it a third to F, and thereby cause it to be a false fifth to the D below) are not aliquot parts of C. All that is required is to blow across the edge at the top, in the manner of the Pandean pipes, or perhaps, better still, to set free a fan or cogged wheel at the mouth tuned to each of the two fundamental notes. The wheel might be set free by the action of the foot upon the pedal as the piston reaches its place. It is now well known that the length of a 32 or a 16-foot pipe may be greatly reduced by breadth of scale. We Europeans have made false, if not, use of resonators, and yet they have been long in use in Java. The drawing on the wall is of an instrument brought from Java by Sir Stamford Raffles more than half a century ago. There is one of the same kind in the British Museum. But this is perhaps of greater interest, as it may have suggested to Wheatstone the principle of the resonating tube. The natives of Java cut metal plates, which they suspend in a row upon strings, and strike them with drum-sticks, which are fitted into circular heads. As all cut metal is more or less false in tone, owing to irregularities and lack of homogeneity, they place some of the largest bars, cut to short lengths and placed upright under the metal, to make the true sounds of these resonators to overcome the false harmonics of the metal plates.

Resonators were used in the theories of ancient Greece—we here find them used in Java; but these powerful auxiliaries to tone still await their development in modern Europe.

And now, in conclusion, permit me draw your attention to a harmonium with two keyboards, the upper one having four octaves of our scale tuned without tempering, and the lower with the five octaves of the harmonic scale, and the stringed notes in the fifth octave. Much has been said of the harmonic scale, and this is perhaps the only instrument on which the harmonics can be fully heard and sustained for experimental use.

[The following are the harmonic scales of C and F which were handed round to the members who were present.]

HARMONIC SCALES, OR SCALES OF CONSONANCES, OF C.

From the lowest C upon the Pandean, having 32 Vibrations in a second of time, according to the Standard and Society of Arts Pitch.

The notes which do not agree with our scale are bracketed thus [].

FIVE OCTAVES.

Notes.		Vibrations
1	C ₀ Fundamental note; whole length of string, the 16-foot C pipe of an Organ	
2	C ₁ Octave above No. 1 (half the length and twice as fast)	64

SECOND OCTAVE.

Ratio			Vibrations
7	c	Seventy above No. 1	8 feet pipe 44
8	d	Fifth above 2 ($\frac{3}{2}$), and Twelfth above 1 ($\frac{1}{2}$)	50
9	e	In the bass staff, Double G above 1	55½

THIRD OCTAVE.

4	e	In the bass staff	8 feet pipe 110
5	f	Major Third to c ($\frac{4}{3}$), and Major Sixth to g ($\frac{3}{2}$)	145
6	g	Minor Third to e ($\frac{3}{2}$), and $\frac{5}{4}$ of e	165
7	[$\frac{7}{4}$ e]	The note between G above 1 and g by 2 ($\frac{3}{2}$)	181
8	e'	In the tenor clef, Minor Sixth to e ($\frac{1}{2}$)	220

FOURTH OCTAVE. (The eight Times.)

4	e'	Tenor c	3 feet pipe 220
5	f	Major tone to d' ($\frac{4}{3}$)	247
6	g	Minor tone to d' ($\frac{3}{2}$)	264
7	[$\frac{7}{4}$ f]	Harmonic Fourth to d' [sharper than one d' by 2]	275
8	e'	Fifth above e' ($\frac{3}{2} = \frac{3}{2} \times \frac{3}{2}$)	330
9	[$\frac{9}{8}$ e']	Harmonic Sixth to e' [sharper than one e' by 2]	363
10	f'	Harmonic Seventh to e'	396
11	g'	Major Seventh to e' ($\frac{7}{4}$), Fifth to f' ($\frac{3}{2}$), and Major Third to g' ($\frac{4}{3}$)	440
12	e''	In the treble clef	528

FIFTH OCTAVE. (The sixteen Times.)

16	e''	Treble c	1 foot pipe 880
17	f	Seventeen above 16	924
18	g	Octave to c	968
19		Seventeen above 16 [only less than a Minor Third to e''] by 2]	997
20	e''	Octave to 16	1024
21	[$\frac{21}{16}$ e'']	Seventeen to 20, Harmonic Seventh to 16, $\frac{3}{2}$ to 24 [only flatter than one f'' by 2]	1056
22	[$\frac{22}{16}$ f]	Octave to 18	1120
23	[$\frac{23}{16}$ g]	Seventeen above Harmonic Fourth	1160
24	g'	Octave to 12	1232
25	[$\frac{25}{16}$ g]	Seventeen to 24, $\frac{3}{2}$ to 36	1296
26	a	Octave to Harmonic Sixth, 18	1344
27	[$\frac{27}{16}$ a]	Seventeen to 26, major tone to 34, and $\frac{3}{2}$ to 51 [one a is a minor tone to 34, a difference of 2]	1451
28	[$\frac{28}{16}$ a]	Octave to Harmonic Seventh	1504
29		Seventeen above 28 [too sharp for one b $\frac{1}{2}$]	1568
30	b $\frac{1}{2}$	Octave to 18, $\frac{3}{2}$ to 30	1650
31		Seventeen above b $\frac{1}{2}$	1723
32	c''	Octave above 16	1760

* This may be named a sharp or f Nat. In nature there is no difference between the sharp of a note and the flat of the one immediately above it.

HARMONIC SCALE OF F.

With 25 Vibrations. To agree with that of C, of 25 Vibrations.

N.B. and if marked * agrees with the scale of C.

FIRST OCTAVE.

Ratio		Vibrations
$\frac{1}{2}$	F $\frac{1}{2}$	12½
1	F	25

Major		SECOND OCTAVE.							Thousands
1	F.	Octave	.	.	.	.	.	.	48
2	G.	Fifth	.	.	.	.	.	.	48
3	F.	Double Octave	.	.	.	.	.	.	48

THIRD OCTAVE.

4	F.	Double Octave	.	.	.	.	.	.	88
5	A.	Major Third, $\frac{4}{3}$ to F, also $\frac{4}{3}$ to G.	.	.	.	.	.	.	313
6	G.	Minor Third, $\frac{3}{4}$ to A.	.	.	.	.	.	.	422
7	[c ^h].	Harmonic Seventh	.	.	.	.	.	.	104
8	E.	Third Octave	.	.	.	.	.	.	114

FOURTH OCTAVE.

9	F.	Third Octave [our d]	.	.	.	.	.	.	212
10	G.	Major tone (G)	.	.	.	.	.	.	4106
10.	"	Minor tone ($\frac{1}{2}$ G) [our a]	.	.	.	.	.	.	240
11.	[b].	Harmonic b	.	.	.	.	.	.	243
12.	c ^h .	Fifth	.	.	.	.	.	.	424
12.	"	Harmonic sixth to F	.	.	.	.	.	.	243
14.	[c ^h g].	Harmonic Seventh to F	.	.	.	.	.	.	304
15	c ^h .	Major Seventh	.	.	.	.	.	.	430
16	F.	Fourth Octave	.	.	.	.	.	.	202

FIFTH OCTAVE.

16.	F.	Fourth Octave [our F]	.	.	.	.	.	.	502
17.	"	The true Semitone above F [not our Semitone]	.	.	.	.	.	.	374
18	g ^h .	Octave to g	.	.	.	.	.	.	4206
19	"	Semitone above g ^h [not pure]	.	.	.	.	.	.	424
20.	a ^h .	Octave to No. 10 [our a ^h]	.	.	.	.	.	.	430
21.	"	Semitone above a ^h , Harmonic Seventh to a ^h	.	.	.	.	.	.	442
22	[b ^h].	Harmonic Fourth to F [above from b ^h]	.	.	.	.	.	.	434
23	"	Semitone above Harmonic Fourth	.	.	.	.	.	.	436
24.	a ^h	In the triple staff	.	.	.	.	.	.	436
25	"	Semitone above a ^h	.	.	.	.	.	.	436
26	[d ^h].	Harmonic Sixth to F [wide from our d ^h]	.	.	.	.	.	.	473
27.	"	Semitone above Harmonic Sixth [wide as d ^h , No. 26 in the scale of G]	.	.	.	.	.	.	474
28	[e ^h g].	Harmonic Seventh to F	.	.	.	.	.	.	512
29	"	Semitone above Harmonic Seventh	.	.	.	.	.	.	476
30	e ^h .	Octave to E	.	.	.	.	.	.	430
31.	"	Semitone above e ^h [wide from the other e ^h g]	.	.	.	.	.	.	442
32	F.	Fifth Octave	.	.	.	.	.	.	504

Our A, B, C, D, E, F, G, A Scale, which we borrowed entire, and without any change of ratio, from the Greeks. (Glaudian Prologus.)

	$\frac{9}{8}$	$\frac{10}{9}$	$\frac{5}{4}$	$\frac{15}{8}$	$\frac{3}{2}$	$\frac{16}{9}$	$\frac{7}{4}$	$\frac{27}{8}$
A,	B,	C,	D,	E,	F,	G,	A,	

The same intervals changed into our Major Scale, by beginning on C instead of on A.

$\frac{10}{9}$	$\frac{9}{8}$	$\frac{16}{15}$	$\frac{11}{10}$	$\frac{6}{5}$	$\frac{12}{11}$	$\frac{5}{4}$	$\frac{16}{15}$
C,	D,	E,	F,	G,	A,	B,	C.

Our Major Scale of G, with the ratios of each referred to the lower G.

1	$\frac{9}{8}$	$\frac{5}{4}$	$\frac{4}{3}$	$\frac{3}{2}$	$\frac{6}{5}$	$\frac{16}{15}$	$\frac{7}{6}$
C,	D,	E,	F,	G,	A,	B,	C.

DISCUSSION.

Dr. BARON said he did not quite understand about the bars mentioned by Mr. Chappell as made by Mr. Saxe, whether it gave all the intervals between the fifth and third harmonics.

Mr. CHAPPELL said that was so. It would sound lower notes, because any horn of that length would have five antinodes upon it. He was not present himself when the capacities were heard, but he saw at once that the extreme length would produce the antinodes, and that the lower notes would be too low for the human hearing.

Mr. C. E. BRUNNEN remarked that in the trombone the lower tones, which were called the pedals of the trombone, were very seldom obtained.

The CHAIRMAN said he had often met with the term the pedals of the trombone, but did not quite understand its meaning.

Mr. BRUNNEN said, properly speaking, there were seven positions of the trombone, which gave seven antinodes, on each of which a note could be played; but the fundamental notes were very seldom played, and, in fact, could not be obtained except under peculiar circumstances. It struck him that there was a slip in one of the figures mentioned in the paper, where it stated that 33 vibrations gave the lowest C of a grand pianoforte. He should say 66.

Mr. CHAPPELL said he was speaking of English vibrations. The French would call it 66 vibrations.

The CHAIRMAN said the French counted each half of the swing of a pendulum as one vibration, whereas in England, in America, and he believed in Germany, the double swing, or as Professor de Morgan called it, the "swing-swing" formed the vibration. The Association probably knew by this time that there were slight differences of opinion between Mr. Chappell and himself, and those who thought with him, on the point mentioned in the paper. He did not propose to go into details, but many of them knew what was the nature of those differences. As to the general question of Whetstone's views on the subject of what he called reciprocation, he considered those views of great interest, and had devoted a good deal of attention to them, especially since the interesting paper by Professor Adams, and had read a paper before the British Association at Glasgow last year, containing a discussion of the question from a theoretical point of view. He also showed them an instrument which demonstrated in a very simple way the nature of the conditions under which it happened that the fundamental vibration of a tuning-fork, or any similar body, did get transformed into the vibration of its harmonics. It did not always happen that this transformation took place, but required peculiar conditions. He

apparatus was made of small pendulums of different lengths, the longest swinging at such a rate as to represent the fundamental note, whilst there were little ones on either side that would swing in multiples of the former. Thus, if the first swung in one second, the next would swing in half a second, and the one beyond that in one-third, and so on, eight such little pendulums being provided. Knowing what the conditions should be under which, according to the laws of mechanics, impulses upon the large pendulum should set any of the smaller ones in motion, he arranged various modes of connection by elastic webs, as he sometimes to give a connection of one type and sometimes of another type. Under these circumstances it was perfectly easy to set the large pendulum swinging while there were tight connections existing between it and the smaller ones, and yet that they would not be set swinging at all. Whilst, on the other hand, directly the connections were slackened in another way so as to bring in a different set of conditions, the whole impulse not being transmitted but only certain portions of it, then all the small pendulums were set in vibration directly. Now, under ordinary circumstances, there were always irregularities in the transmission of impulses, by which much the same effect as those of the irregularities in the elastic connections between the pendulums, caused the very faint resonance of the harmonics perceived in the instrument of Whetstone—a most remarkable instrument, and one very well worthy a good deal of attention. He only mentioned this, not to attempt to explain his own views, but to point out that he did not counter as the statement of the general principle of reciprocation, and that he thought that there was a great deal to be said from the point of view of the more advanced theory, which they now have a great deal about, but of course they did not profess to fully understand it. He could not, however, accept, either as an experimental or theoretical result, the idea that any vibration whatever could, if its impulses were transmitted without transformation, support vibrations of its harmonics. That was not true generally. It was true that some small amount of transmission went on, an amount generally very small, but there might be occasions in which it was very large, and therefore more noticeable. That was all he would say on that particular question. With regard to the instrument from Jena, a sketch of which had been shown, it was very interesting. The metal plate being placed upon tubes of bamboo, so arranged as to be resonant to the fundamental note, the effect was that when the plate was struck a perfectly smooth and prolonged tone was produced. It was an instrument in some respects more perfect than any in use in civilized countries. He did not know how far the tuning was accurate, but any one at all interested in the music of untrifled nations could have no better material for experimenting on than that instrument. He added that he had often had an idea of

making a small piano-forte with tuning-forks and small resonators at the bottom.

Mr. STURGES said he thought that would be an admirable way of increasing the sustaining power of the instrument at a small cost.

The CHAIRMAN said the tone would be smooth and not brilliant, but it would be very expressive.

Mr. HERBERT SMITH said an instrument such as that spoken of was made by Mouton some years ago; it was rather an expensive instrument, called the *diapason piano-forte*.

Mr. COURTES said he was not aware that he had anything to add to what he had stated in the paper. [The main difference of opinion between the Chairman and himself was as to the universal application of Wheatstone's law. In a paper read before the British Association in 1874, Mr. Romagnesi excepted to it that 'the stopped pipes of an organ are incapable of supporting the vibrations of resonators tuned to their octaves and double octaves, while open pipes are capable of doing so.' To this objection Mr. Chappell demurred, as not being one which affected the law, since it was due only to mechanical interference. The cap upon the stopped organ-pipe forced the vibrations back upon the succeeding column at the octave or half distance, thus the ascending and descending vibrations neutralised each other. This neutralisation did not occur in other instruments, where the channel was continuous, as, for example, in the bassoon. Again, Mr. Romagnesi consulted the late Sir Charles Wheatstone about certain new musical theories, and admits that Sir Charles told him they were 'all wrong.' Nevertheless he applied the term 'more advanced theory' to them this evening. At the same time he admits that he does not fully understand this 'advanced theory,' and the question will naturally arise, why then does he judge? Wheatstone's law is proved by Wheatstone's resonating tube—a stopped pipe in which vibrations are free from interference. It supports all its harmonics, octaves included, with equal force. The continuous vibrations of the one fundamental note produce four octaves of harmonics by the simple process of diminishing or enlarging the resonator by pushing the piston up or down. This cuts away the basis of Professor Helmholtz's deductions, and, with it, the 'advanced theories' must fall also.]

Mr. SILLIARD announced that at the next meeting a paper would be read by Mr. W. H. Cummings, on 'The Formation of a National Medical Library.'

DECEMBER 3, 1877.

GEORGE GROVE, Esq., D.C.L., in the Chair.

THE FORMATION OF A NATIONAL MUSICAL
LIBRARY.

By WILLIAM H. CHURCHER, Esq.

THE title of my paper, 'The Formation of a National Musical Library,' may be open to some misconception, and I should like therefore to premise that it does not simply mean a library of national music, though that certainly should form a very important and indispensable section of any national library. The subject proposed for consideration is one which most sincerely deeply interests all musicians, amateur and professional, and the theme is capable of so much expansion that I could, without difficulty, engage your attention during the whole of the time allotted for our meeting; but I shall be brief, in the hope that my few remarks may instigate some considerable discussion, leading, perhaps, to practical action.

Firstly, then, let me state what a National Library of Music ought to possess. As to printed music, it should have every published book which treats of the art or science of music in any of its very numerous branches. It should also possess every published piece of absolute music, whether part-book or score. Some among us, probably all of us, have musical libraries; one, perhaps, especially rich in full scores, one in vocal scores, named or unnamed, one is probably, one is antiquarian musical works, another in scientific or theoretical treatises; and it is of course natural that each should look with more favour on his own collection, representing the special bias of his mind, or his particular line of study; but all the varied collections I have named should find a home in a national library of music. Thus far I have spoken of printed music only; but a 'National Musical Library' should also be the great repository of precious musical manuscripts, particularly those by composers of our own country; these are often of priceless value as pieces of national history,

and if not properly preserved, by degrees drop out of sight, and, 'out of sight out of mind,' thus eventually become lost for ever. It must also be borne in mind that although printed books are often rare, sometimes unique, from the nature of things in the case of manuscripts, they so seldom exist in duplicate that the loss of any one is generally irreparable. A few years ago old printed musical literature was to be bought for pence, where the cost would now be pounds; and manuscripts then often considered almost as valueless are now rarely to be met with—indeed, very many have disappeared altogether. I could easily cite instances in proof of this, from old sale catalogues and other memoranda. The time, then, for completing a national library of music is now—to-day. Prices can never be less than they are at present, and opportunities for the acquisition of musical treasures will yearly become less frequent. Many things conduce to this result; there is the universal cultivation of musical knowledge, historical, antiquarian, and practical; moreover, our country in America and our brethren in the Colonies are all awakening to a feeling that they must have musical art and musical libraries. The supply of the works of past years is fast limited, and the appetite and demand for them is becoming unlimited; when a dozen would be purchasers of the same article strive and compete, the result must be to raise the price. It may be noted as a curious fact, that reprinting a scarce work seems generally to have the effect of enhancing the market value of the original, not of depreciating it, as is sometimes imagined.

I have said that precious musical manuscripts, as a rule, do not exist in duplicate, but modern art enables us to make up, in some measure, for the deficiency. A national library of music should possess photographs of desirable manuscripts which exist in other national or public libraries; by this means the student would be able to read the inspirations of Handel, Bach, Haydn, Mozart, Beethoven, and other-giants, with a confidence that he was perusing the expression of their thoughts, penned and noted by their own hands, and in the very symbols characteristic of each of them.

Let us now consider whether it is reasonable to hope for such a library as I have described, and how and where such an one may be formed. To my mind it is clear that the British Museum is the true home for the library I have endeavoured to sketch out, and that there we ought to find an ample supply for every want.

At the British Museum most things find a home: all the objects and all antiquities are there splendidly represented; general literature, too, is to be found in magnificent profusion, most admirably classified and cared for. The only unfortunate in the whole establishment seems to be music and musical literature; music appears to have been regarded by the trustees as a very poor relation of very little consequence, and therefore has just tolerated, with a very distinct understanding that as little

money as possible should be spent on her. This condition of things may have seemed natural and proper a few years ago, when, for instance, the authorities of the Museum decided themselves the advantages of the services of the well-known music librarian and antiquary, Thomas Oliphant, for the sake of a few pounds per annum.

In 1861 the neglect of the music deposited in the national library of the British Museum had become so notorious that it was considerably discussed in the public journals, and the attention of the House of Commons invoked. Since then, however, a very beneficial change has gradually supervened, and now there is an ardent desire to place music on a better footing. The past neglect of music at the British Museum induced the late professor of music at Gresham College, Edward Taylor, to attempt the formation of a musical library in connection with the civic institution which he so ably and so faithfully served. He solicited donations of books from friends and the public generally, and met with encouragement from various quarters, Her Majesty the Queen contributing several volumes. The professor's efforts and intentions must, however, be considered to have failed; in 1872 a catalogue was printed of the music in the library of Gresham College, and apparently the whole collection did not exceed 400 volumes.

I shall not refer to the Gresham Library further than to say that, from personal inquiry, I find it is not available for consultation by any but the professors attached to the institution, and therefore of small practical use. Perhaps it would be a wise and generous act if the trustees would present it to the Free Guildhall Library, where, at present, I believe, they have no musical literature, but where rich and poor have common and free access every day to the vast stores of information treasured up for their edification.

To return to the British Museum: I urge its claims as the true and proper home of a national musical library, firstly because it already possesses a magnificent stock of one which shall be really worthy of our country. Properly stored and developed, it would soon become unrivalled. No exertion in other quarters (South Kensington or elsewhere) could possibly produce such a library as the British Museum already possesses. I believe at South Kensington they have a small musical library, ancient and modern, but there the student has to pay a fee before he can obtain access to the books; at the British Museum all is free.

The British Museum has another excellent and singular advantage. By law it receives a copy of every publication issued in this country, Latin, and the volumes. This in itself is a matter of the utmost consequence. It is true, the Museum is obliged to accept everything, whether valuable or worthless. The mere delivery may enrich it with the new costume 'Joseph,' and burden it with the 64th edition of 'Tommy make room for your wife.' But this is not altogether an evil, for the worthless song or ballad of to-day becomes to-morrow a piece of history, and is a hundred

years time may prove scarce for the pen of a future *Manuscript or Friends*.

Another most important reason occurs to me for preferring the British Museum for a musical library; it is this—where the student has at hand every help which he may need to thoroughly prosecute his inquiries, for it is quite possible that he may, although only a musician, want to refer to some work of history, geography, travel, biography, or even medicine.

As to the musical collection proper which is already in the British Museum, I can only give a few rough guesses. Probably I shall not exceed the truth if I say that the catalogue of printed musical literature includes nearly 100,000 works.

Of the manuscripts, Mr. Oliphant prepared and printed a catalogue in 1842, and the collection then contained of 241 volumes, many, of course, containing a considerable number of distinct musical compositions. Now, I think I may say the collection will amount to 1,000 volumes, or more.

The MSS. are of varied worth, commencing with graduals, service-books, and treatises of the 12th century, and including many autograph compositions of native composers, as also others by Handel, Mozart, Beethoven, and Schubert; the most modern addition to the collection being the series of autograph scores of Balfe's operas, presented by the composer's widow.

Amongst the manuscript treasures are two books, one a thick volume written on vellum by John Wylie, Professor of Wadham Alder about the year 1400; a volume full of learned musical matter, and remarkable as having become the property of the celebrated Tallis, who has written his name in the book in two places; from Tallis it passed to Thomas Morley, and was largely drawn upon by him for his celebrated 'Introduction to Practical Musick,' 1597. The other book is which I refer to as oblong volume, a considerable portion of which is written on staves of twelve lines; it was compiled by Thomas Moulton, probably for the use of King Henry VIII, and contains many youthful compositions of Tallis and his fellow-scholars. Amongst the poems in the well-known four-part song, 'In going to my naked bed,' by Edwardes. I am every time well not permit me to speak more fully of some other manuscript treasures, such as Beethoven's sketch-book.

Now, with all the advantages I have named, can it be possible that anything is really wanted in the British Museum? I answer, yes. First of all we want an index catalogue. We all know that without a catalogue and index a library is almost useless, excepting probably as an ornamental illustration of the art of bookbinding. Only a few weeks since a society was formed, called the 'Index Society,' for the purpose of printing indexes for standard books in general libraries.

At the British Museum the catalogue is very incomplete; recent purchases of music are not entered in a separate class catalogue, but have to be sought for amongst State papers and

other inconspicuous matter. Poeticals, hymnals, and service-books are sometimes only discoverable in the catalogue of liturgies, and printed medical literature has to be sought out from the general catalogue; musical composition being the only branch of our art which enjoys the advantage of a separate class catalogue.

It seems to me that a complete catalogue and index, embracing all the varieties of which I had previously spoken, should be immediately prepared, and that the catalogue of works published before the year 1800 should be printed and sold. I stop at the year 1800 arbitrarily; at the end of the century it will be time enough to consider the propriety or necessity of printing an appendix. The catalogue index of the MSS. might include all the most recent additions, because they increase but slowly, and MSS. must in all cases be historical.

Now, in order to secure these catalogues it will be necessary to devote a little more money to the medical department of the Museum; and it would be a fine thing to make it a distinct class at once; placing the printed works under the supervision of Mr. Evans, and MSS. under Mr. Jenner; both those gentlemen being well qualified by their knowledge and sympathies for the special branches I have named. When these catalogues and indexes are formed, it will be easy to ascertain in what respect the library is deficient; and no pains or expense should be spared to supply whatever is wanting.

Can we, as members of this Association, do anything to aid in the good work? I think we can. First of all, we can endeavour to persuade our wealthy friends who have medical libraries or books to bequeath or dispose of, to give them to the British Museum. One very excellent reason for suggesting the British Museum as a safe depository for such treasures is the very thorough protection taken by the authorities to guard against fire. The commandant head of the Fire Brigade of London has told us that all private libraries are inevitably doomed to become the prey of the fire-demon. So freely is Captain Shaw conversant of the fact, that he has drawn up a table showing what is the average length of existence of books. Secondly, if we ourselves come across some medical treasures not already in the Museum, we can secure it and hand it over to the trustees without charging a commission. Thirdly, we can formulate and subscribe some proper memorial to the Prime Minister, asking for a special grant of money on behalf of the Medical library at the British Museum. At present the annual vote to the Museum is £10,000 for books in all classes of literature, and £5,000 for binding. With such a large field for expenditure, of course but a very poor and inadequate sum can be allotted to music—we mark the more inadequate sum in consequence of the long years of neglect. And it must be borne in mind that any extraordinary outlay for purchases would only extend over a very few years, until such time as the arrears, if I may so call them, have been wiped off.

I cannot help saying a few words respecting the resources

of the trustees of the Museum in not availing themselves of special opportunities for acquiring celebrated musical collections within the last few years. I need only speak of instances within my own memory and observation. In 1876 the library of Thomas Clapham was sold, and as a rule the books were disposed of for sums far below their real value. Doubtless the whole might have been secured for the Museum, and such surplus books as they would not have needed could have been re-sold. As it was, an agent for the trustees attended the sale, and so carefully were the interests of the Museum looked after, that many books they ought to have had were bought by private individuals. I purchased several, which I subsequently transferred to the agent for the Museum. Since then, in 1878, the Stansfeld Bennett collection has been sold, and dispersed into various private hands. More recently still, in the early part of this year, the Hinckley library was brought under the hammer, and a large number of books of national importance, and MSS. which we can never replace, were purchased for America. It is also currently reported that all Mendelssohn's MSS. were recently offered to the British Museum on certain easy conditions, but were declined.

As an example of what has been done in another country, I need only mention the library of the celebrated critical critic and historian, Fétis, purchased by the Belgian Government, and deposited in the National Library of Brussels in its entirety. The noble work was consolidated and made generally serviceable to the world at large, by publishing a complete catalogue of nearly 1000 pages. Some mention must be made of the splendid musical library belonging to the Sacred Harmonic Society, a collection which has been acquired by purchase and gift since the year 1847, commencing modestly with a copy of Arnold's edition of Handel. It has increased so rapidly that it now numbers 8000 volumes, all of which have been thoroughly indexed and catalogued by the librarian, Mr. Hook, whose labours in the cause of musical bibliography deserve especial mention, and I can only deplore the fact that the fine collection under his care must, from the circumstances of the case, be considered a private one.

At the commencement of my remarks I stated that national music would, of course, occupy a prominent place in a National Library; and we may reasonably hope that a thorough revision of the arrangements for the musical collection at the British Museum would induce other eminent bodies throughout the kingdom to a sense of their responsibility in regard to the preservation of national music. Every cathedral and college in the land ought to have been a great storehouse of national music, but ignorance and indifference have permitted a most wicked waste of valuable material. True it is that at the Chapel Royal, St. James's, some five or six years since, there were splendid old parchment books, now, I believe, turned out of the chapel—I hope not to share the fate of kindred works in former years, and be treated as rubbish

and waste. There are still valuable fragments of part-books at Westminster Abbey; there were also such at St. Paul's Cathedral, especially organ part-books, when I was a boy, but I fear to inquire what has become of these now.

Doubtless, the same tale may be told of other cathedrals. I venture to say this because I have from time to time bought at public sales books including autograph manuscripts of Purcell, Crotch, Beeding, and others, which have in former years belonged to the Chapel Royal and various cathedrals and colleges. I would suggest that the Deans and Chapters should publish an index catalogue of the music they possess, and that all older rare part-books should be removed into the library for reference, supplying their place with modern printed or MS. copies for daily use. In 1861 the Dean and Chapter of Ely inaugurated a movement in the direction suggested by publishing a catalogue of ancient services and anthems preserved among the MS. scores and part-books of Ely Cathedral.

I believe I have now entered sufficiently into details to enable the members of the Association to form an opinion as to the advisability of drawing up and presenting a memorial to the Government, asking that music shall receive such encouragement and pecuniary aid as its importance demands—that the National Musical Library in the British Museum may be made complete in every sense. In doing this we shall be speaking on behalf of the whole of our musical community, whether amateur or professional, upholders of old notation or speakers of a new; and on behalf of both sexes—for the British Museum ladies are placed on an equal footing with gentlemen, and are treated with that unvarying courtesy and consideration which is always marked and distinguished feature of the numerous gentlemen who form the official staff of the library.

DISCUSSION.

Major CHAMBERLAIN said the subject was one of very great importance to everyone interested in music, whether as a professional or as an amateur, and he hoped the result would take some practical shape. As regards the British Museum it was most questionable that that was the proper place for a musical library to be established. In the first place it was a permanent institution, and all societies like the Harmonic Society, though they might earnestly hope they might be permanent, were not necessarily so; and supposing anything happened to such a society, the library would be put up to auction, and a large part of it would probably be sent to America. In the Museum again, all books were taken care of, and it was freely open to all. Thus, speaking as a reader, the first thing

he wanted was an index. That was the first thing they should look to, and it would enable them to see their way more clearly. At present medical literature was divided into two classes: the mass proper, which had a catalogue to itself, though that actually was very imperfect, and also a very large class of medical literature which was scattered through the general catalogue, so that unless a man happened to have bibliographical experience, he could not find anything he wanted—there was no guide to a student in commencing his researches. There was, in fact, no such thing as a catalogue which formed a general guide to medical literature. The old-volume on a large scale was that of Fournelli, published in 1794, and there had been supplementary catalogues published at different times in France and Germany, but there was no general catalogue which would enable any man to ascertain for himself the different books he might require for any particular line of study. Another topic had been slightly touched upon, and that was the reprinting of ancient and scarce works. There were a great number of works which were exceedingly scarce, and not to be found in any museum, some of which undoubtedly would be worth reprinting. Some of them might be small treatises of the 16th or 17th century, but they contained a great deal of interesting illustrations of medical history, and their republication would be very important. There was a precedent of this kind of thing in the reprints produced by Mr. Arker not long ago, of scarce works of the Elizabethan time, which were carefully produced and indexed with bibliographical and topographical indexes, and sold at a price from 1s. to 2s. 6d. Something of the kind was done in Paris some years ago, for when he was there he met with several old treatises, the originals of which were now to be seen, edited with great care, well printed, and sold for two or three francs. No doubt the number was limited who purchased these things, but they probably repaid the cost of publication. It seemed to him that that society would be doing good service by selecting such of these old treatises as were worth republishing for the benefit of the present generation. There was a large and increasing number of persons now taking an interest in medical literature, and he had often had inquiries as to where such and such a book could be obtained, which in many cases he was unable to answer.

Mr. W. GIBBS, Vice-President, said this was a subject to which he had long taken a very active interest and in fact the present catalogue in the British Museum was due primarily to himself, he having brought before Earl Cowley the anomaly that while publishers were taxed to supply a copy of such work which they owned, there was no catalogue either of music or of manuscripts in the museum. He again had had the happiness to be the proposer of the Musical Acquisitors Society, which had done something towards reprinting old works. With regard to this point, it was absolutely necessary there should be a society to reprint these works. As the written treatises to which reference

had been made which came from the British Museum and the Bodleian, except one, were edited by himself and sent over to Paris. But he doubted if they could print them here at so low a rate, unless they could get encouragement from a large number of subscribers. He thought it would be therefore a question of serving the Medical Antiquarian Society.

Dr. Baillou said he might make a remark or two on the allusion by Mr. Commaige to the fact of Calixtus having collections of manuscript notes. Soon after he went to Westminster he found an opportunity of inquiring what was in the library, and he found the made was very carefully catalogued, and even in that library he found a very interesting manuscript, a setting of the *Te Deum* written in score for strings, trumpets, and drums. He had shown it to Sir Frederick Ouseley and to almost every musician of any eminence with whom he was acquainted, but he had not found any one who knew the author of it; it was a manuscript of apparently about the date 1700, and probably Italian. It was very fine music, and it would be a pity if it were lost sight of, even his predecessor, Mr. Turle, had never seen it, although he had been there fifty years. With regard to part-books in cathedrals, although he thought they should be taken care of, his own feeling was that the sooner they were removed out of the way of the choir the better. He knew that in some cases out of ten, where difficulties arose in the performance of the music, it was from this cause—the choir sang from old part-books while the organist's copy had been lost or destroyed, and he had a new edition which did not always correspond. He could lay his hand on a particular service which had been in use for many years, in which the choir had two or three more than the organist had. Therefore, though he should be very sorry to destroy these old relics, which were very interesting and important, he thought they ought to be put away in the library.

Mr. Baillouster drew attention to a remarkably good index which had of late years been compiled, namely, the Royal Society's index of Scientific Papers. He did not know exactly when it began, but he believed it was projected about the year 1860, and the first volumes appeared about 1868. At all events there were now six large volumes, and every scientific paper which any person the least known had written within the last fifty or sixty years was entered by its full title in that catalogue; therefore any person who wanted to look up any particular subject only required to know the names of the men who had treated it, and he could by consulting this catalogue find out everything to be known on the subject, without the slightest difficulty. He did not agree with what Mr. Commaige said, that the catalogue should be only up to the beginning of the century, waiting to the end before a supplementary catalogue was to be published, because then it would be enormously large. He believed the Royal Society's plan was to publish a supplementary volume every ten years, at any rate one was issued from time to time. He must say that if the work was to

be kept going, the catalogue should always be in progress, for this was the only way in which it could be done, there should be some one who would make it his daily business to enter everything in its place as it was published.

Mr. Bonn (Keeper of the MSS. in the British Museum) being called upon by the chairman, said Mr. Cunningham had so thoroughly gone into the subject, that he had really very little to say. The Museum had received a due amount of credit for what it had done, and some little blame for what it had not done; but he thought the fault to a great extent lay with early collectors not having paid sufficient attention to this subject. For instance, in the manuscript collection of Lord Harley, Sloane, and others, the subject of music had been altogether overlooked. Mr. Offprint's catalogue was printed in 1862 and included only some 240 manuscripts, but since then there had been much greater access, and they might have credit for having more than doubled them in the last ten years. Within the last ten years they had added about 100 or 150 manuscripts, but he must recited the meeting that if an opportunity occurred, there were many difficulties in a public auction-room, where there were very strong bidders, and where if a museum went to bid the price generally rose directly; and they were therefore obliged to use great caution. It was more by the assistance of individuals like Mr. Cunningham that they were able to get over such difficulties. The thing most needed was to induce private owners to bring forward the treasures which they had. It was seldom a museum could buy a very large collection, because it would lead to a number of duplicates which they had not power to exchange. If they wished they could exchange under certain circumstances, but not merely as duplicates. As to the general index to musical manuscripts, one great difficulty was in the cataloguing, which had only been brought down within the last few days to 1875. They had also a classified catalogue in use in their own room, in which all these things were represented in their places. The reflection made on the employment of Mr. Offprint he thought required a little modification. That gentleman was keeper of the manuscripts; he offered to make a catalogue, and his offer was accepted. In conclusion, he said if there was any subject on which information was wanted, he should be happy to give it, but he thought the great difficulty would be, if efforts were made to obtain the classified index of printed books, that the same thing would have to be done with regard to all other branches of literature, which would be a very extensive task.

Mr. Otto Gutschmidt, Vice-President, said he had recently visited the Fitzwilliam Library at Cambridge, but that had no catalogue. He felt some hesitation in speaking on this subject, because it was a special one which required particular study; but he might remark with regard to Mendelssohn's manuscripts, that he did not believe they were ever offered to the British Museum.

Mr. Buns said they had not been, to his knowledge.

Mr. Owen Gossensetter said he believed the faculty decided if possible to leave them at Berlin, and there they remained. But there was a collection of Handel's manuscripts—it was true, only copies, not authenticated copies—in the handwriting of Smith, which he was very sorry to say had been allowed to go from England. It struck him that that was one of the most important collections, because Handel's original manuscripts, as they know, were shut up from general use at Buckingham Palace. If a plan could be devised to found a National Library, these various items would probably in course of time return to it. He might also state that Sir Sturges Bourne had several times spoken to him about his own library, and he felt quite certain that if there had been such a focus as a National Medical Library, his collection would have gone there. With regard to the Fitzwilliam Library, he could only speak of it with very great diffidence, because there was no classified catalogue. The Handel manuscripts did not strike him as very important, but there were several very interesting things, as for instance three or four volumes in the handwriting of Dr. Croft, Parrell, Dr. Boyce, and Dr. Blow. The Berlin Royal Library received a large grant every year. It contained most of Sebastian Bach's manuscripts; it was admirably classified and indexed, and was now under the care of a musical custodian.

The Chairman said he thought it was a mistake to blame the authorities of the British Museum for anything that had happened in this matter, for the state of music in the Museum was but an index of the state in which music had been in England generally: until lately, it had been looked upon as a matter of amusement, not of serious study. His own experience was very much in favour of the trustees, for he remembered some twenty years ago, when he was studying the works of Sebastian Bach and began to make a thematic catalogue, he went to the museum and found but a very small collection. He then got all the lists from German publishers he could find, and made out a complete catalogue of the publications made in Germany up to that time, and sent them in to Mr. Pearson with a note, and within a short time all those works were provided; he could not therefore think it right to visit the shortcomings of the library on the trustees. He did not believe the trustees had any idea of the way in which music had come to be looked upon in England lately, but if it was properly brought before their notice, very likely something would come of it. The musical department of the library a very unequal. It contained some books you would not expect to find there at all. For instance, the 'Florilegium' of Bodenschatz (1803-21), a collection of extraordinary value, of vocal music of the 16th century, for from 4 to 10 voices. That is a rare work, and it is there. On the other hand, Salera's fine collection of Spanish music, which may be got by merely sending to Madrid, was not there, nor was it, he believed, in any other public museum. There was one in the Fife Library at Geneva, but not at Berlin, Leipzig,

or Vienna. He should like to see some practical result coming out of this paper. Mr. Cummings had most admirably and temperately brought before them the exact state of the case, but he did not think it would be for that society or for any private person to start an index catalogue. As to the suggestion which Major Crawford had made, that certain lists should be republished, he was afraid it would be necessary to start a society for the purpose, like the Perry or Camden societies, or to find some publisher who would do it; and he believed there were gentlemen there who would support his opinion, that there was very little chance of reports of this kind being produced at such a rate as to pay the publisher. Mr. Archer commanded a much larger field; he dealt with general literature, while those who took an interest in music were comparatively a small number. He believed, however, that if they could bring exactly what was wanted in a composite memorial before the trustees of the Museum or the House of Commons, there would be some chance of its being attended to; and he would therefore suggest that the Council of the society should be requested to draw up a memorial, to be submitted to a future meeting. He was afraid that they must not think that those who were interested in this matter were a very large or influential body, and probably the trustees would complain of the expense which would be involved, but if they persevered they might eventually succeed in doing something.

Mr. W. H. Constance said he had not referred to the question of reports because that was for some private association or a publisher; the Museum had nothing to do with it. In his proposal as to catalogues he did not intend them to form anything like an index society, because he understood that it was the duty of the Museum to prepare a proper index; and his reason for stopping at the year 1800 was that previous to that year medical literature was not very large, but since then its growth was so enormous, that if they proposed to bring up the catalogue to the present day, they would have to include everything published daily in Regent Street, which might be an obstacle. What they wanted was a commencement. He did not care even if they stopped at the year 1700, so that they got the beginning of a proper indexed catalogue; and if they asked for too much, he feared there would be no chance of getting it. If a memorial were drawn up as was suggested, he hoped it would not only be signed by members of the society, but that it should be placed in the large music warehouses, so that people might append their names; and he believed they would find in a short time that those who would sign it would be neither few nor unimportant. Dr. Bridge's remarks with regard to Westminster Abbey fully justified him in having called attention to the libraries of cathedrals, and nothing could be more conclusive than the fact he had stated. The fact was the part-books to which Dr. Bridge had referred were written in older times, some probably by Talles and other learned men, and they required learned men to read. Such

man were not now to be found, and therefore it would be much better to go to Kneff's and get a 3d. copy, and put these books into the library for reference, where they would be most valuable for study by those who understood them. They had come to this point in cathedra, that a gentleman who perhaps had not been brought up to music, but who happened to have a voice and could sing after a certain fashion, went there and had to read from a book unbarred, with certain hieroglyphics which represented as many bars. He met with a mode which he had never heard of in his life, and he thought there ought to be a sharp in one place, and put it in accordingly; then the man who came in on the following day, and had the same thing to deal with, thought there must be some mistake, and altered it back to a natural; whilst the next man put a flat - and so at last it became almost unintelligible. It was quite clear, therefore, that these books should be put into the library as treasures for study, and not employed for ordinary use.

The Chairman said he did not think the collection of Smith's Handel could very well have been bought, because no one could have been more anxious for the acquisition of that collection than the late Mr. Hawley was to acquire it for the Sacred Harmonic Society. It was only owing to some extraordinary chance or some sudden resolution on the part of the person to whom it belonged, that it was not put up for sale.

Mr. ORR GUNDSCHWARTZ said he did not refer to the first purchaser of the collection, but to the second. It went to the public library in Hamburg, which was very poor in works of that kind. It was bought for Hamburg, and might have been equally well retained for London.

The Chairman said there was one point which Mr. Cummings had referred to, in which he was much interested, namely, that of the possibility of collecting for the musical library facsimiles of the autographs of great musical works. He knew, even from the little experience he had had in the subject, how interesting these things were. He was much struck with this when he went to Vienna to look for the Schubert manuscripts. Nothing could be more instructive than the original manuscript of Schubert's great symphony in C Major, showing the corrections and material alterations which he had made, during the process of composition or revision. Not only were these altered after treatment, but one of the most interesting passages in the whole manuscript was crossed out as an after-thought. He remembered also the manuscript of the third movement of Beethoven's ninth symphony at Berlin, where he remarked a thing which he had never seen noticed by anybody else, viz., that the Trio in the Scherzo, where it changed from triple time to common time, was in 2 time in the manuscript, instead of 3 as it was now printed, which would make a certain difference in the accent of that movement in its performance. All these things could be easily made accessible by photography, and this was a point in which

the British Museum had much more power than any private individual. There were several notes on the margin of Sanderson's manuscripts, showing the places where he had written them; and these were very interesting, and might be made available by photography.

Mr. COTTELL said the Fitzwilliam Museum, which was now under the eye of Mr. Sidney Colvin, showed very forcibly the necessity for having an expert to deal with these medical matters. Since Mr. Goldschmidt had been there, some one had been looking at the catalogue, and there was a note to the effect that one of the books was inaccurately bound. It was in fact one of those volumes in which the author had written at both ends, and had it been bound in any other way, it would have been inaccurate.

It was then moved by Major CHURCHILL, and seconded by Mr. GOSWAMY:—‘That the Council be requested to prepare a memorial to the trustees of the British Museum, calling their attention to the deficiencies and imperfections in the collection of manuscript and printed books and medical literature in that museum, and the great want of an indexed catalogue and other means of more ready reference than at present exist.’

The Chairman suggested that this memorial should be submitted for signature to the various recognised medical institutions, such as the Royal Academy of Medicine and others. This was agreed to and the resolution was carried unanimously.

Mr. PARRY remarked, with reference to the difficulty of getting a catalogue completed, that the last time he was at the British Museum Reading Room, he had occasion to consult Mr. Evans, the superintendent of the printed books, who pointed out to him some books he had recently reported (some of which he wanted to refer to), and told him that it would be two years before they would be on the shelves.

The Chairman said that this difficulty arose from books being a part of the general machinery of the Museum library, and he thought they would never get the special portion into a satisfactory state until it was made separate and distinct, and its great and growing importance recognised.

JANUARY 7, 1878.

JOHN STAINER, Esq., M.P. Dec., is the Chair

ON THE LAWS OF MUSICAL EXPRESSION, AS
FORMULATED BY M. LUSKY IN HIS 'TRAITE DE
L'EXPRESSION MUSICALE.'

By J. SEPPOUR CHERRY, Esq.

THIS paper is addressed to teachers, rather than to artists. In it I present to you a summary of Lusky's *Traite on Musical Expression*—a work published in Paris in 1874, and now in its second edition. I know nothing of the author beyond his own statement, that for twenty years he has been a professor of the piano-forte in Paris. His work is dedicated to M. Gervais, principal of the *Bernicle Conservatoire*, 'who,' says the author, 'when illustrious theorists and composers declared that a treatise on expression was impossible, encouraged me to proceed and gave me valuable advice.' Musical people all shake their heads at the notion of reducing to rule such an intangible thing as expression. As well, they will say, might we show a person how to love, or how to impart feeling to what he plays. Of course there is much truth in this, but let us try for the moment to slay our prejudices, and hear what M. Lusky has to say.

In these modern times, he remarks, the popularisation of music is wonderful, but expression, which is the soul of music, remains the possession of a few gifted natures. We meet with many clever executants, but few expressive players. The reason of this is evident. Formerly, only persons of musical talent cultivated music, but now society will have everybody to learn, and everybody has not musical feeling. Eminent professors have come to the help of executants who are wanting in musical feeling, and have annotated for expression many of the vocal and instrumental works of the greatest composers. By strict observance of their marks, the least gifted player may arrive at some appearance of artistic performance, but these marks carry him no farther than the pace they are applied to. They address the eye, not the intelligence; they tell us where we are to give expression, not why. What the pupil wants to know is, why he

should play a passage in one way rather than another; *piano* rather than *forte*, *ritardando* rather than *accelerando*, &c. Musicians think it is sufficient if they abandon themselves to caprice, forgetting that even in musical expression all is cause and effect, and that in a truly artistic interpretation no note will be arbitrarily accented. M. Lussy says that the object of his work is to furnish rules which will enable every student to play with expression. He declares being a lawyer. The rules he mentions are, he says, unconsciously observed by all great masters, and instinctively artists of every sort have conformed to them. His work has been to classify and formulate.

The origin of the book is this. Twenty years ago, when the author was appointed professor of the piano-forte at one of the great boarding-schools in Paris, the lady principal asked him to give the pupils rules for playing with expression, not this or that piece, learnt with difficulty and soon forgotten, but all pieces; he found, of course, that no such rules existed, and therefore sought by observation to arrive at the facts. For twenty years he listened to the best artists and made notes of their variations in force and speed. After a time he became convinced that in the same passages these artists gave in the main the same expression.

We shall understand M. Lussy's position better by an illustration. Suppose I distribute copies of a Sonata that is absolutely new to you all, and which is without any marks of expression. I ask you to indicate the expression by marks of your own. Of course there will be many differences, but will there not be some coincidences? Will not the setting of the phrases, the emphasis of notes and chords, the points of *crescendos*, *diminuendos*, *ritardando*, &c., be for the most part the same? If you deny that there will be any agreement, M. Lussy will give you up; if you admit it, he will claim you as a colleague.

It may naturally be said by some, 'We admit this general agreement, but every professor understands it, and would teach upon the same outline of expression.' The answer to this is, Do the pupils understand it? Do they as a rule play with expression or without it? and when they leave us are they able to discover for themselves the appropriate reading of a new piece?

Lussy meets also another objection: that if we lay down rules we lose the play of feeling. There will always be plenty of scope, he says, for that magnetic fund which escapes analysis, and, with a truly French instance of expression, he reminds us that knowledge is liberty, but ignorance is license.

The author describes the three elements of modern music as Tonality, Measure, and Rhythm: in other words, the key-relationship of tones, the regular recurrence of accents, and the division of music into phrases. When the performance of any kind of music begins, the ear takes note of the key, the measure, and the shape of the phrases. The memory guides the expectation, and anything which breaks the regularity is noticed. Music is of course full of such irregularities, and it is they that especially

acute feeling. The less a note or phrase is desired by the ear, the more force it should receive, as if only by violence can we make the ear forget its desires and associations, and form new ones. Let the professor draw his pupil's attention to the construction of the phrases, to the harmonic and melodic changes, to the tonal, modal, metrical, and rhythmic irregularities—in a word, to the unexpected, unexpected notes, the true germs of beauty, which give birth to expression, and which need his special care. In this way he will keep alive the attention of the pupil, develop his mental feeling, and cultivate in him the irremediable habit of observing, comparing, and analysing.

Passing over tonality, the first element of modern music, the author devotes his book to the consideration of accent. This, he says, is of three sorts: metric accent, which addresses the musical instinct, and makes even the uneducated hear time to the music they hear; rhythmic accent, which addresses the musical intelligence, and is to music what punctuation is to speech; and pathetic accent, which addresses the musical feeling. Measure accent is important, but it must give way, when necessary, to phrase accent, and pathetic accent overrides both. The final chapters are devoted to light and shade, and metronomic speed.

Leury takes Rhythmic accent first. He dwells on the importance of phrasing, and the want of a special sign in music to mark a phrase, the long curved line being used indifferently to express a legato or a musical phrase. He says that a child should be taught, from the first time he learns, to notice the periodic recurrence of symmetrical phrases, two and two, four and four, or eight and eight measures responding to each other. These illustrated by quotations from songs, which are marked for phrasing. He divides phrases into regular and irregular. Regular phrases have an even number of measures, irregular phrases have an odd number, and, he says, are really regular, but for effect have been expanded or contracted, or contain a repetition, echo, or melodic sequence. Of course, it is these irregularities which give point to the music, and to omit them destroys its beauty. Leury's object is only to show that they are departures from strict rule. He explains the similarity between the phrase in music and the line in poetry. This practical remark is useful, that pupils in going over a difficult passage, when practising, should be taught to take it up at the beginning of the phrase to which it belongs, and not at the bar, as they generally do.

Within musical phrases there are subdivisions or *phraseslets*, as one might say, the construction of which is important. Every instruction book for the voice, says Leury, applies this minute study of accent to the most elementary exercises. Pseudoric primers, on the contrary, only give the notes, and young players are content to play in a flat and uniform manner. Here is a passage given by Kalkbrenner, as capable of different readings, according to its place in the music:—



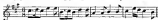
Leary's notion of the subdivision of phrases, so far as the pianoforte is concerned, is founded on what he calls "wrist articulation." Within a phrase which is contained in one long slur including legato, there are often places where the pianist is obliged to lift his wrist. As often as these wrist articulations occur, so many phrase subdivisions are there. Examples:—



Leary enters minutely into the rules of phrasing. Many of these which he gives seem to me made for single cases. He ends by saying:—"In quick movements we must not make sub-divisions of the phrases. It is better not to make divisions at all, than to make too many, and so give a halting effect to the music. Feeling, here as everywhere, must be the principal guide. Intelligent practice will so sharpen the taste of the musician, that intuitively he will make divisions which no rule could foresee or prescribe." For a rule-maker like Leary, this seems rather an impotent conclusion. But even if phrases be too various and individual to be classified under any set of rules, yet the study of his examples cannot but be useful to the player.

To show what a definite thing a musical phrase is, and how its

character may be changed by adding or suppressing a note, Leury quotes the following passage from an air by Mozart:—



This has been set to words by a French artist, and the words being *lambic*, require a note to be added at the beginning of the first line, so that each phrase begins on the last of the measure instead of the first:—



This speaks the whole character of the phrase. As Leury says, 'its pastoral character is gone. We no longer hear the song of the shepherd, but the sob of an afflicted lady in a fit of hysteria, sighing for her sweet-lover.'

In a chapter on Musical Phrasing, Leury dwells on the importance of the phrases of music and words, of sound and sense corresponding. His examples are interesting, but as the point is obvious, I pass on.

The rules for the accent of measures—I adopt the French word instead of the English 'bar'—are those that every one knows. The first note of a measure has a strong accent. In two-time the second note is weak, in three-time the second and third are weak, in four-time the second and fourth are weak. Then come the exceptions: weak beats become strong if they contain accented notes. A single note which carries on the march of the music, while the other parts are postponed, must be strong though it comes on a weak beat:—

Barriers.



Repeated notes are always strong:—

Waves.



Lastly, every note preceded by a silence is strong

In applying these rules of accent, Lussy speaks of the importance of grouping quarters and eighths so as to show the accents. He complains of triplets so common from not being marked, and says that notes should be so arranged that it is impossible for the pupil to confuse $\frac{3}{4}$ and $\frac{3}{8}$ time. Referring to *Adagio*, *Tempo*, &c., with eight, twelve, sixteen, or twenty-four notes to a beat, Lussy recommends that such measures should be mentally subdivided. The eye cannot take in so large a space, and needs points of repose, much less can the ear preserve the feeling of unity and regularity, when the recurring accents are too distant. As the phrases of waltzes are generally of two measures, that is, of six beats, he recommends counting, beating, and regarding them off they were in $\frac{3}{4}$ time instead of $\frac{3}{8}$.

We now come to *Pathetic Accent*. This, says Lussy, might be called *Poetic Accent*, and to an Englishman the word *Poetic* better expresses his meaning. It springs from the soul, and is not subject to any regularity. It affects one note or many; it falls anywhere—on the weak beat or the strong, on the initial or final note of a phrase. The essence of its character is defined in one word—'the unexpected.' Whatever its place, it produces the most delicate contrasts and moving alternations. Under its influence the artist, conquered and carried away, translates his emotions not only by redoubled energy and increase of tone, but also by acceleration of speed, necessarily followed by a *ritardato*, a sort of hesitating in the tone and movement, whence spring a thousand charming contrasts and poetic shadings. *Pathetic Accent* is provoked by the unexpected. Whatever breaks the routine of key, measure, or phrase, and rouses upon the ear new desires, new attractions, requires to be forced upon the mind, which is distracted and arrested. Our first tendency is to regard these introducing notes as false, but immediately perceiving that they are conformable to law, and only form new centres of attraction, the mind accepts them. The artist gives expression to this struggle by more intense accuracy, and by greater animation. A frequent cause of pathetic accent is the *Syncope*, which is familiar to all. Another is repeated notes, which demand a *crescendo*—



When in an answering phrase a group of short notes takes the place of the longer ones, we accent them heavily. You all know

the following air from the 'Daughter of the Regiment.' The first four notes are accented in the fifth measure by seven, and we repeat the additional notes heavily :—

Descent.



When we come upon a measure containing one note to a beat, after measures containing divided beats, these single notes receive an accent :—

Descent.



Similarly, when we come upon unexpected triplets, these are accented :—

Descent.



When we leap to a high note, it needs an accent :—

Gloria.



When we leap to a high note and then descend through a series

of notes, we glide to the high note, but detach the descending notes —



Lussy happily compares this effect to the rebounding of an india-rubber ball when dropped to the floor, each rebound smaller than the last. Here is another example, in which the high note is reached by a run —



Chromatic notes are always accented. —



Every note or passage which causes a displacement of key or

mode is accented. 'The tonic,' says Lussy, 'is a king who cannot be dethroned without a struggle.' The more remote the transition, the greater the emphasis required:—

ADRIEN.



DIXIEVILLE



A musical score for piano and violin. The piano part is in the lower register, featuring a series of chords and single notes. The violin part is in the upper register, featuring a series of eighth and sixteenth notes. The score is divided into two systems. The first system shows a transition from a major key to a minor key. The second system shows a transition from a minor key to a major key. The piano part is marked with 'f' and 'rit'. The violin part is marked with 'f' and 'rit'.

Above all, emphasis must be given to *chromatic changes*, which are the strongest form of modulation.

Below then given examples of *chromatic chords* occurring *successively* :—

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Harmonic appoggiaturas are always wanted.

Barthman.



Dissonances of long duration need to receive emphasis. 'The more heterogeneous elements a chord contains,' says Lussy, 'the more dissonant and hard it is, the greater vigour of attack it requires. The ear will not submit to such a dissonance unless it is imposed upon it by something like brute force.' The example is a daring and beautiful dissonance in the *Adagio* of the 'Moonlight Sonata.'



In concluding this chapter, Lussy says that the *Pathetic Accent* should be wholly avoided in pieces of a quick movement. In those of moderate speed, we must employ it with prudence. Nothing is so pretentious as a simple and uniform piece overcharged with pathetic accent.

The next chapter is on variations of movement as affected by feeling, *accelerando*, *ritardando*, &c. Lussy assumes the two schools whose practice is here in conflict. For one school, to play with the regularity and precision of a machine is the height of perfection; for the other, there is nothing dangerous in the halting execution which varies the movement with each phrase. The one supposes detail to unity, the other, unity to detail. For himself, he would conciliate both general interests and particular rights, and keep a happy medium.

First, as to *accelerando*, I quote a few of the examples and rules.

A repeated group of notes, with a bass moving stepwise, up or down, is accelerated:—



We quicken at a short rhythmic design, repeated, ascending or descending:—



We quicken at the end of a quick movement, if a short group of notes is repeated many times on a stationary bass:—



We conclude at a phrase accompanied by full chords, following one which is in *argeggio* :—



Among the rules for the recitativo in *flauto* we observe that a high note responds to a low one in an answering phrase :—



A recitativo occurs in a melody ascending stepwise, especially when followed by a leap to a high note :—



This recitativo is above all necessary when the highest note is repeated :—



While some passages excite animation, others, on the contrary, invite calm, sadness, and reserve. Of this sort is the following, where a phrase based in the major is repeated in the minor :—

ROBERT



In such a case we naturally slacken.

The most frequent *ritardando* takes place at the end of a soft and sweet phrase. It is only players of the most mediocre sort who do not employ it there instinctively.

Liszt has a good paragraph on the expression of ascending phrases: 'All ascent is struggle; physically as well as mentally, it is to raise one's self to a higher point against the tendencies of nature. The steeper the road, the more energy we must display. The more energy we put forth, the more rapidly does the pulse beat, the more animated do we feel, but without, the more rapid is our exhaustion. Once at the summit we breathe freely. This comparison illustrates us with a simple explanation of the tendency of musicians to begin an ascending phrase quickly, and slacken towards its end. It also explains to us the disposition to pause or drag upon high notes.' Liszt adds a useful remark, that the subject can allow himself modifications of movement which in an orchestra are inadmissible. Here each individual must lose himself in the general result, and sacrifice any notion of expression which may belong to the shape of his own part.

We now come to *Shading*: the gradual passing from loud to soft, or soft to loud. The effect of this is to posture the musical picture, by blending the otherwise too startling contrasts of light and shadow.

The first rule is, that ascending passages should be *crescendos*, for the reasons already given. Descending passages should be *diminuendos*. To descend is to relax effort. It is not necessary to illustrate these familiar rules. There are of course exceptions to these two rules. If a descending passage contains modulation or chromatic or dissonant notes that need to be impressed upon the ear, it must be *crescendo*, and on the other hand, cases may be found in which an ascending passage should be *diminuendo*.

The need of contrast is so important, that before it all else goes way. Even a passage which by its own contrasted cells for vehemence, becomes pious if it follows one more vehement still. There is a phrase in the *Adagio* of the 'Sonata Pathétique' which, by its ascending shape and leap to a high note, requires *crescendo*. (See beginning of fifth measure of quotation.) But it is overshadowed by the more commanding passage im-

moderately before, and is therefore played pianissimo:—

Decreases.



In practice, Lussy recommends players to study a new piece for themselves—noting the modulations, the shape of the phrases, the rhythmic repetitions. If there is a kind of dialogue, the question and answer should be contrasted in tone. Many musicians, he says, think that in a very soft passage all accent should disappear. This is a mistake. The dynamic proportions must always be preserved.

The last chapter is on Metronomic movement. Lussy complains that the Italian terms which describe speed are wanting in precision. According to those who employ them, these terms have very varied meanings. This fact he proves by giving the metronomic marks of four editors of the 'Sonata Pathétique,' which show how various are their interpretations of Beethoven's terms, *grave*, *allegro*, *adagio*, &c.

Every composer should mark the speed of his movements by the metronome, but Lussy goes so far as to doubt if he can be trusted to do this. 'The author,' he says, 'at the moment when he has given birth to his composition, is in a state of excitement, and has a tendency to exaggerate the movement, whether in the direction of slowness or quickness. He may even be mistaken as to the character of his work, and prescribe a

movement inappropriate to it." This last statement, which Lussy allows to be an astonishing one, is proved by reference to the two pieces known as Weber's *Last Waltz*, and Beethoven's '*Le Diable*.' These are taken from sets of waltzes, yet played in waltz time they would lose all their beauty. The public, says Lussy, has fixed the true rate of movement for these compositions as well as for many others.

The general rule for deciding a movement Lussy illustrates by an analogy. Everybody knows, he says, that the finer and simpler are the lines of a picture, the further off must we be to judge of it as a whole. While, if its lines are complex and numerous, we must draw near to distinguish them. From this he concludes that the more rich a composition is its expressive elements, the more slowly it must be played, while a piece which is simply written, and consists mainly of a plain surface, must be played quickly, in order that its scattered elements may be consolidated.

Speaking of movement, Lussy says, "Beware of whole papers" by which he means those which are not studded with double-sharps and flats. They are not necessarily easy. "How often have we heard Weber's '*Invitation*' played by pupils who need a couple of pages more hard work to play it in a satisfactory manner. Why give pupils pieces so much beyond their strength? Considering only of notes and sharps and flats, these papers look innocent enough; but if the master only considers the terrible word *Allegro* at the head, he will hesitate before giving them to his pupils. It is rate of movement, more than anything, which renders a composition difficult."

Here, ladies and gentlemen, my summary ends. You may not have agreed in all that Lussy says. I myself do not adopt his opinions in every detail. You may deny that rules of expression are possible, yet you can hardly deny that there is some common sense in the practice of the best musicians. As to the painstaking nature of the work, we must all be agreed. The author proceeds upon the *a priori* method, and every one must feel the value of the systematic study of the best passages in modern music which he encourages. It has been said that our discussions here are too theoretical. The subject of my paper has at least the merit of being practical, and of having a distinct bearing upon our teaching.

DISCUSSION.

The Chairman proposed a vote of thanks to Mr. Curwen for his excellent paper, and also to Mrs. Curwen, who had so ably illustrated his remarks on the pianoforte. He said the difficulty of dealing with this subject was the enormous ground which it

covered, so that it really required a master mind to bring it into anything like a scholar form.

Mr. W. H. Crossman had listened with great interest to the paper, but he was sorry to say that he was one of the unhappy ones in the rules laid down. He believed it would be quite possible to frame rules for anything, but such rules as those they had heard would, he thought, be positively detestable. He could find throughout the whole series of examples which had been given sufficient means for denoting their appositions in every case, and in such cases he could even find an instance for doing exactly the opposite to that recommended. Without going through the whole, he might mention especially one point, the changing from one tone to another, which, it was said, should be rapidised, but which he thought would be a most cruel thing. He could call to mind an instance when this was done in a very delicate way, and if it were done in any other way it would lose half its charm; he referred to the well-known song in the *Alceste*, 'O rest in the land.' After going into a key quite remote from the original, it returned to the key of G, the modulation being given on the cello, and the more softly it was played the more it was liked. Then, to lay down a rule that when you descended it should be either *crescendo* or *diminuendo* would be absurd. He could quite imagine that in every case Brahms and Tchaikovsky would play them in quite different ways. Some of the examples which had been given he had heard played by Mendelssohn and other great masters in quite a different way to that recommended. So again with regard to Weber's 'Last Waltz,' which of course was written by Reisinger. That was a very unfortunate example. It must be remembered that there were two kinds of waltzes, one slow and one quick, and the waltz referred to was of course intended to be played in the old German slow waltz time. It never was meant to be played very quickly. Although it was possible to lay down rules for the guidance of students, and no doubt it would be well to mark the phrases for them, because they were not capable of distinguishing them for themselves, when you came to the matter of expression, that depended on the individual soul. You could say to a pupil, you may do it in this way because it has been so done in old times, but that might not always be appropriate now. He had by him some interesting sets of songs from old cantatas and other sources prepared by the master of Miss Stephens, now the Countess of Essex, and he could only say that the marks of expression there put to the song, 'Angels, ever bright and fair,' if followed now, would make one laugh, instead of carrying sympathy and pity. This only showed that rules laid down at one time, though they might appeal to the feelings of the individuals who had employed them, could not be a safe guide to the feelings of ages to come. You must depend on the soul of the artist for all real expression.

The Rev. Thomas Hastings regretted that he had not heard

the whole of the paper, but it struck him, there were a great number of things mentioned that were not in accordance with fact. For instance, when he came in, the remark was being made about the greater difficulty of an ascending than a descending passage, because, it was said, in nature it was harder to ascend than to descend. He should be very sorry to suppose that none of them appreciated the principle of *Recitativo* or failed to remember that if you held a cork at the bottom of a bucket of water it would rise to the top as soon as you released it, and the same will regard a balloon. With regard to voices also, it depended very much on the compass of the voice whether it was able to ascend or descend more easily. With regard to the metronomic distinction of time, he had heard Mendelssohn himself say that you could not always keep the same time; all expression should be the outcome of the feeling of the time. With regard to cultivating a proper sentiment of feeling in choral bodies, he suspected that if you could get an intelligent choir it would be far better to leave them without written marks of expression, trusting to their own feeling at the time, with the assistance of the conductor.

Dr. HANCOCK said he could not agree with Mr. Holmore's last remark, and thought you must have expression marks for concerted music. He should be very sorry to have to learn an enormous number of rules, but there was a great convenience in being able to lay down certain rules with regard to expression, and, as had been remarked, the paper was intended rather for teachers than for artists. A great deal of his time was occupied in teaching boys, and of course it was no use saying to a boy of eight or nine, 'You must sing with expression; you must give him something definite to lay hold of.' And if you told him that, as a rule, when a passage ascended it should be *crescendo*, and when it descended *diminuendo*, and so on, each general rule might to some extent be useful. If he remembered rightly, expression was divided into three classes, of which the poetic came last; that was the one in which rules were most wanted, but it was also the one in which it was most difficult to lay them down and apply them. Allusion was made to the harmonic appoggiature, and he pointed out that was part of the harmony of the chord, it was natural it should be lagged on. Some appoggiatures were stronger in the harmony, and therefore were got rid of as quickly as possible. But really, as to laying down rules for poetic expression, he thought it was about as possible as to write a manual for manufacturing melody, though he believed Dr. Stainer had such a work in his library.

Mr. STURGES was sorry to differ from Mr. Holmore as to a choir being left to their own discretion.

The Rev. T. HINCHES said he did not mean entirely so, but, generally speaking, a great number of marks were unnecessary. He also made the proviso that they should be intelligent people.

Mr. STURGES said, when you were playing on the pianoforte

you saw all the parts of the music at once, but in singing in a choir the performers only saw one part, and so such general rules would not answer the purpose at all, because one part might be singing an upward progression and another a descending, and the whole effort might be intended to be *accrescendo*. He could nevertheless all that had been said about the difficulty of metronomic marks, for in his humble capacity as a composer he had sometimes endeavored to mark the time, but found it next to impossible to do so, for if he put by a work and took it up again, he found he could not even agree with himself as to the most proper tempo. He did not mean that he expected from Philip in one condition to Philip in another, but it was an other impossibility to draw a hard and fast line as to the precise tempo most suitable. With regard to marks of *accrescendo* because a passage went in a certain direction, and all rules of that class, he would say that you might apply them to a piece of music, mark every phrase in every possible way, study the precise duration of every note, and all the marks of *sfzando*, *accelerando*, *diminuendo*, &c., and might follow every one of the rules laid down, yet play it wholly without expression.

Mr. W. H. Cummings said he must remark in defence of Mr. Helmore, that they had had an example of the truth of what he said with regard to choral singing, for not long since a choir visited London, consisting of about thirty German gentlemen; they were eminently intelligent men, most of them Henry men, and so on. They sang at St. James's Hall, and with an immense amount of expression, but their music was wholly without marks, it being all indicated by the conductor.

Mr. Bellini was rather astonished at the general opinions expressed. He says those with the impression that they would not be able to find words sufficiently *adjective* to mark their appreciation of Lussy's work, and for the express purpose of clearing some of the credit in connection with it for other writers in France. Those who had expressed their disapproval had however stated that they had not read the work; he had been studying the work for a year and had not yet mastered it, and it was evident therefore it was not to be thoroughly understood in some ten minutes' lecture. A great many of the rules to which exception had been taken had only been partially explained, and numerous examples had been omitted, as was inevitably the case on such an occasion. His primary object, however, was to show that this book was in fact only the second portion of Lussy's work, the first portion being published in 1863, under the title of 'A Reform in the mode of teaching the Piano-forte.' This was a work for professors, pointing forward an entirely new method of teaching the piano, in which pupils were required to write their own exercises, and it was based almost entirely on a book published in 1844 by Eusebe Choud many passages being transcribed bodily from it. Another source to which Mr. Lussy was largely indebted was the new

method of teaching music by M. Galin, from which he had transcribed literally some half-dozen pages. Both these latter works, however, were intended for vocal music, whilst Lassy's was essentially for the piano, so that he had a vast amount of original matter appertaining strictly to the instrument of which he was so great a master. The theory of musical expression he divided into three parts—metric, rhythmic, and pathetic. The metric portion was entirely based on Cherd and Galin's notation, and Cherd's theory of time was the one used throughout the book. In the same way, with regard to rhythmic accent, if he were to ask the meeting what was rhythm, he imagined he should have as many different answers as there were persons present, because it was not defined in any manual, and probably if he asked what was a rhythm they would not understand what he meant. These and all the other terms were used by Lassy, as defined by Cherd in 1844. In the same way, when he came to harmonic exceptions, that was entirely based on Cherd's harmony applied to the staff notation. In making these remarks he did not wish to depreciate the labours of Lassy or to accuse him of plagiarism, because he had simply acknowledged his indebtedness to these authors, but simply to say that until they accepted the theories of Cherd, they could not accept those of Lassy. He might add that twelve months ago he knew that Lassy's work had been translated into English, and the manuscript was in London, so that they might expect soon to hear an English edition announced.

Mr. Baxter said the remark made by Mr. Carver on the absence of all instruction as phrasing in existing *pianoforte* manuals was, he believed, a just one, except with regard to one lately issued by Mr. Frederick Taylor, in which he went into the subject in a very careful manner, giving by way of illustration one of Mendelssohn's 'Songs without Words,' and put words to it in order to show the analogy between a phrase of music and a line of poetry.

The Chairman said that there could be no doubt of the difficulty which Mr. Carver had had in giving any adequate idea of the contents of M. Lassy's work. In all questions connected with expression they had to contend with the unsatisfactory way in which the subject was treated. It at once divided itself into two great branches: first of all, what was the individual expression of the performer, and secondly, what was the expression intended by the composer. He did not think it would be out of place to call one *subjective* and the other *objective*. If you had a piece of music put before you, you must suppose the composer intended certain things, and you had to discover whether he wished you to put a strong accent in certain places or not. That was one thing entirely, but the actual expression of the personal feeling of the performer seemed to him a totally different thing. He was afraid that in nearly all works on expression these two things were hopelessly mixed,

because you found a constant alternation from paragraph to paragraph, it must be applicable to the feeling of the player, to those about the expression intended by the composer. It seemed to him that unless you could get a man with a philosophical turn of mind who would fairly divide his subject in that way, it would never be properly treated. First of all, you might to discover the intentions of the composer in writing his music, and then if you liked to incorporate M. Lussy's generalisations and adapt them to it, well and good, but when you got to this and you might very likely disagree. You might bring forward a sufficient number of good cases to show that an ascending passage should be played *crescendo*, but when you came to real expression the question was, what did you mean by it? The term was often used very carelessly and without a definite meaning. It might mean that the performer had properly represented the composer's meaning, or that he had added to it from sources purely subjective. That was a question very seldom settled, but he thought it ought to be dealt with. Thus, a double boom of the question suggested itself, especially in the case of people of real genius. He had heard quite young people give at different times totally different readings of the same piece of music, perhaps owing to their state of health or mind or to the state of the audience; because if a man of genius had a sympathetic audience, all the best parts of his sensitive nature were drawn out, whereas if the audience were cold and critical an opposite effect would be produced. In that way you had the purely subjective form of expression, and as to teaching it, you could only do so by training the emotions, and to do so you must have the natural faculty to begin with. With regard to the meaning intended by the composer, what was really wanted was to find a philosopher and musician who would kindly say, not whether ascending or descending passages required the *crescendo* because they were difficult or easy, but because they were in some subtle way an out-pict of the expression of a certain emotion. An ascending passage, even if it were considerably minor than the corresponding descending one, would in some cases and often require some emphasis placed upon it, because the mind was under a different idea with regard to ascent than with regard to descent. If any one had any doubt about this, he would only ask them to take any piece of music and put a cross against the number of descending passages in which a *crescendo* was marked, and he thought they would be very few. With regard to the writing down of marks of expression, you again came to two branches of the subject. In solo music you wanted very few marks, because you could not give expression if the performer had not got it, but as regards concerted music, you must have certain suggestions. Probably the truth would lie between the two extremes: a certain amount of written instruction should be given, and all other detail should be at the discretion of the conductor. He believed, however, that English music lost a great deal through not using English terms. You might just as

well say 'With dignity,' 'With fervour,' 'With spirit,' 'With sorrow,' 'Joyfully,' and so on, as our foreign terms; and if these words were written on the music, he thought they would be much more likely to produce the desired effect than writing 'Cres. marc.', 'Religioso,' 'Arden.', and so on. But after all, you could only give indications, for if the performer had not got 'joy,' or 'sorrow,' or 'fervour,' he could not use it; still, if you used the corresponding English term for the emotion you wished to produce, it would be a very great advantage. He hoped that any friend of M. Lasey would understand that generally speaking they were ignorant of his work, and could only judge from the short account which Mr. Curwen had given, and for which they were much indebted to him.

Mr. HUGHES said that every algorithm brought forward to-day was met and provided for in M. Lasey's book.

Mr. CURWEN, in reply, said he was encouraged to hope that he had not wasted the time of the society by bringing forward this subject. It seemed to him they had gone in this direction to some extent by the practice of introducing marks of expression, which was quite a modern use. This seemed to indicate there were some rules, and the question was, whether to go on or to go back; were they to abolish those rules already given, or to try and formulate them? He thought they might get some light by the analogy of elocution: in all manuals of elocution you found no end of rules laid down for getting up a collection from Shakespeare or any other authors. No doubt a collection got up on that principle alone would be a rather dry affair, but the question was, did not the student profit by having his attention directed to the subject of pauses, emphases, and so on?

Mr. CURWEN thought it was a mistake to say that marks of expression were of recent invention, because he could point to marks nearly 300 years old on which they appeared.

Mr. CURWEN said they were much more common now.

Mr. STRECHER said Handel's *Harpsichord Lessons* were published without any marks of expression.

A vote of thanks was then unanimously passed to Mr. Curwen for his paper, and to Mrs. Curwen for her illustration on the pianoforte.

January 4, 1874.

GEORGE ALEXANDER OSBORNE, Esq., is THE CLERK.

SEQUESTIONS FOR A MORE EXPEDIENT MODE
OF WRITING THE TITANOTES IN MUSIC.

By the REV. T. HATSON, M.A.

THE title of my paper seems to forbid any tedious method of bringing its subject before the Musical Association.

It would be incongruous, in the advocate of greater expedition in writing music, to weary you by any unnecessary beating about the bush in explaining the proposed method of attaining it.

The fact is, that what I have long thought of, and some years since proposed (not without their commendation) to some earnest composers, as a lessening of the actual manual labour of recording their inspirations, has so little that is either a mystery, or difficult of acquisition, that its very simplicity precludes the necessity of any long explanation.

At the same time, I am not willing to suppose that the learned musicians and scholars whom I have the honour of addressing will despise any invention, however slight its claims to no honourable a name, if, simple as it is, it at all answers to the promise it holds out in the title of my paper. I must, however, ask you to follow me in a few remarks on analogous improvements of former ages, which first suggested to me the kind of musical shorthand I am going to describe. The additions, first of one line, afterwards of three, and afterwards again of more, to the doubtful pictures of the ages prior to that of Guido Arezzino were an incomparable improvement in the mode of noting the sounds, previously so uncertainly indicated without them.

And thus were, I venture to affirm, an undoubted advance, if not towards greater precision as to the actual identity of the sounds represented, yet towards facility in deciphering them, and consequently of saving from them, over the fifteen letters of the earlier Roman nomenclature.

And why, I would further ask, if I weary the senses of the

Association with me thus far—why was it that the lines of the stave, when invented, soon took the place of every other system of representing (together with their clefs) the various pitch of notes in music?

Was it not because the lines and spaces of the stave, far from being mere arbitrary characters, which the letters of the alphabet, however employed, whether simply in acronyms (as from A to G) or by the two diagonals of the fifteen notes named by the first fifteen letters of the alphabet, from A on to P, must always remain (even with Mr. Carwen's skilful manipulation of substituted syllables)—the stave was, and is, a *symbolical representation*: in which there is a natural affinity between the sign and the thing signified—a pictured embodiment of the natural metaphorical terms descriptive of those qualities of sound which, by a sensitive consent of civilized nations, we all understand by the terms *high* and *low*?

This—let me be pardoned for reminding you—is by no means so obvious, however, as that other metaphorical views might not have reversed the terms. If, for example, the sounds of the purlow-pipe in the earliest ages, and in the latest those of our greatest organ, were taken according as their tops are high or low in measurement from the foot of each, the sound of the organ-pipe G¹ with its some 32 feet would be a tremendously high note, while a *vi*—marked *c'* with its few inches would be a very low note. So also as regards the strings of a lute—the closer the string, the lower the sound of it might have been called. But we all find that the metaphor corresponding with the natural phenomena of acoustics, viz. the higher number of vibrations, as sounds are produced from shorter pipes or strings, is that most acceptable to our imaginative conceptions, and the artistic workings of the lute, no less than the soaring notes of some infinitely sublime 'prima donna,' impress us with the idea of rising towards the ethereal vault of heaven, rather than as a downward descent to the solid foundations of the earth, or to the unfathomable depths of the roaring ocean. What then I wish particularly to notice is, that the stave is distinctly a symbol of the rising and falling of sounds, according to this most fitting view, in which the perceptions of the eye are metaphorically used to describe those of the ear, and the more rapid vibrations are accordingly assigned to the higher, and the slower vibrations to the lower place, both in our ordinary language and also in the ordinary notation of music.

It is true that the symbolism of the stave with the various clefs does not meet all the exigencies of the case—it simply shows that sounds rise and fall in a general way—but has to be helped out as to the actual amount of tone or softness, partly by the general feeling of the diatonic scales, partly by the aid of the arbitrary signs,—*data*, *sharps*, and *naturals*.

Still, I maintain that the Stave system of symbolic rising and fallings is preferable to any system in which each symbolism is

entirely done away. I admit the partial defectiveness of the score, but cling with a kind of affectionate gratitude to its abundant excellences as far as it goes.

I have in former years attempted, for the sake of young learners, to show the places of the semibreves by additional coloured modifications of the stave, but this is not the time to try more on that head.

Now then, in spite of the difficulty of representing in an equally symbolical manner all the varied extensions of diatonic tones and semibreves (which, as I have said, is not by the use of the mere solid-vary-signs,—sharps, flats, naturals, and double flats and sharps) in spite, I say, of this, while fully recognising the convenient and most admirable symbolic representation of the ascent and descent of musical sounds, afforded by the stave itself, it has not to my great content been as yet accompanied by the adoption among us of any similarly symbolic representation of the duration of these sounds.

I guard myself from overstating this fact, by the qualification "to my great content," because there are some approximations (heretofore to be noticed) to the plan I am now to suggest for introducing, at all events for the composers of music, what I consider a similar improvement for time in music, in that which I have been referring to, by way of parallel in the eleventh-century improved notation of the pitch of musical sounds.

My plan, then, is this: Provide a special kind of music paper. The five-line staves, in number, collection, size, colour, and all other respects exactly as they are now usually ruled for us, and solid in the shape, are to remain; and flats and sharp and flat signatures are to be made as heretofore. Time-signatures may also continue the same, if not exchanged for a simpler and more suitable form, suggested by the new way of representing the time-notes.

For this last purpose, let the music paper be also provided (in the way found practically most convenient) with ready-ruled bars, dividing the staves into equally measured portions, which may serve for one bar or (more accurately speaking) measure either of duplo, quadruplo, or of triple and compound triple time. Say these staves and bars are ruled in black. I then propose that each bar or measure should be subdivided into two, four, eight, sixteen; three, six, twelve, also, or eighteen smaller parts, about a quarter or the eighth of an inch wide for the less numerous divisions, and the sixteenth of an inch—more or less—for the bars that are to contain many quarters, semiquavers, and demisemiquavers,—these subdivisions to be ruled either entirely through the page, or partially through the staves, and perhaps a little above and below them, to meet the case of ledger lines. These petty-bars, as they might be called, should be strictly distinct from the bars, and this might be provided for by the use of different colours, as red or blue, or by being of the same colour as the bars, only ruled much lighter and

less thick. These are all accidental details, which would soon be settled by general experience, supposing any number of composers adopted the use of such paper, and there were consequently a market for its production and sale.

When you have got your paper thus ruled, all for the pen of the composer to do would be to draw a straight horizontal line over the particular line or space each of his notes required, and through all the fractions of the bar for which each was to last.

Signatures of key, as I before said, would have to be made just as at present, and the time of each movement would also be indicated in the same manner as usual, or, as I think might be better, by a fractional form, followed by the sign *so* for equal to, and the particular time-note of our present arbitrary system, which was to be the unit in each measure of the movement. Paper would have to be chosen according to the requirements of the composition;—a movement in common or compound common time would have its corresponding rulings, and so also in triple or compound triple time.

If a sudden change from one kind of time to another were wanted, I own a difficulty would occur, in which I should rely much upon the ingenuity of the composer to aid him in determining the best mode of notation. I could suggest several, but will defer them now, to go on, as expeditiously as I can, with the regular straightforward method of writing on my stenographic music paper.

Each note, I have explained, is to be represented by a single horizontal line occupying the same portion of the measure ruled on the music paper as is required for the minims, crotchets, or quavers, or dotted note, &c. &c. which has to be noted. As these representations of sounds will, on each staff, occupy the entire fractional, or whole portion answering to the time-notes required, the absence of any horizontal stroke from any bar or portion of a bar is all that we should want to indicate silence, during the bar or bars, or portions of a bar, which in our present notation would require corresponding rests. So my stenographic would get rid of the necessity of writing rests altogether, in the ordinary course of composition. It would, however, still be competent, in separate parts, where instruments or voices were required to be silent during some movement to be performed by others, for the composer to write, 'Thou shalt have,' or any other number, just as at present.

And here let me point out a singular advantage of my plan, viz., that no sign, nor mode of writing, which any composer preferred to employ, as usual at present, need be excluded from the special music paper. In fact, any piece of music written upon it in the ordinary notation, by a transcriber of any accuracy and accuracy, guided by the bare and petty-bars of this paper, would, if I am not mistaken, present to the eye of a performer as clear a MS. that he would find it equal to, or even preferable to ordinary printed music.

In fact, one argument in favour of such accurately measured

music paper is, that it introduces into MS. some of the clearness of division secured by careful engraving, or music-type printing.

And, similarly, the mode of short-hand writing I propose would easily be translated by engravers and printers' compositors into the present notation, which I, for one, have no wish to supersede, unless it be found by experience that the shorter mode of writing I have now explained, in its general principles, is at the same time easier to learn, and more easy, when learnt, to be deciphered.

To redeem the promise I have made, of referring at the close of this paper to one or two points before passed over, I may mention that in much of the Plain Song music printed both abroad and at home, the long black beams or lines, representing many monotonous repetition notes, are an approximation in symbolic feeling to my stenographic notation, without any pretension of accurate measurement.

Now, as to the change from Common to Triple time. The music paper printed with bars for the one would (be we observed) offer a difficulty if the writing were continued on the same sheet; and to change from one to another frequently would be very annoying.

One way of getting over it would be to make fresh bars, as we write on, thicker than the printed ones, taking these as only subdivisions of the new measures.

Another which occurs to me is, to put in the new-time bars with another coloured ink.

But the difficulty would not occur at all if we used paper simply divided by vertical lines—on which the bars would be written in (as usual) by the composer as he wanted them.

I am sorry that I have not been able to exemplify the system by fuller and better diagrams; in fact, I owe very much for the larger diagrams to the kindness of Mr. Somers Clarke—without which I could not have explained my plan nearly as well as, in this respect, I trust I have done to the satisfaction of my hearers.

If in any degree I have suggested what may lighten the severe labours of our great benefactors, the composers of sublime and beautiful music, my own time will not have been wasted in this attempt to enable them to save theirs.

DISCUSSION.

Mr. STRENGTH asked how repeated notes would be marked; for instance, how would *B* crotchets in a bar instead of a semibreve, be written?

The Rev. T. HANCOCK said there was a specimen on the board consisting of the first two bars from the haunting chorus in *Der Propheten*, in which the semibreves occupy one-eighth each of the entire measure, if the crotchets of a measure were a crotchet it would be represented in the same manner. In handwriting round a MS. specimen in which room enough had not been taken

in the ruling of the 'patty-lines' to note the division of the measures without crowding, he remarked that he once heard a celebrated lecturer on chemistry say that you might learn as much from failure as success, and he had endeavoured to do so from this experiment. One of the difficulties he found was where there were notes on the line and space close together, e.g. where the chord of $\frac{7}{4}$ was followed by $\frac{5}{4}$. He proposed to overcome this by using a lozenge-shaped note instead of an oblong one.

The Chairman said that last year Dr. Stainer read a paper on a new notation, and he, the Chairman, actually wrote the method for Dr. Stainer, in which a diamond-shaped note was used for a $\frac{7}{4}$, a square note representing a $\frac{5}{4}$. He showed some model written in this way to a pupil, a piece of Chopin's in seven flats, and another in seven sharps, and after the system had been explained, the pupil read it off at once. The system seemed very complete, but before it was finished, Dr. Stainer received a letter from a country squire, claiming it as his invention. He should like to know, therefore, whether this was really Mr. Holmore's invention, or whether he was at all apprehensive of some letter coming from the previous claimant.

The Rev. T. HERBERT said it was quite possible that others might have come to the same conclusions, but he had never seen anything of the sort. He proposed to make an accidental sharp thus \angle by an upward sloping mark, and a flat by a descending one, thus \searrow .

Mr. STANFORD asked how Mr. Holmore would write a chord which occurred in one of Mendelssohn's *Under the Wolds*, consisting of $\frac{7}{4}$, $\frac{5}{4}$, $\frac{3}{2}$ and $\frac{1}{2}$, the signature being in the key of D.

The Rev. T. HERBERT showed on the black board the manner in which this chord would be written, according to his proposed method.

Mr. ROSSIGNOL said he remembered Dr. Stainer's paper on the subject of notation very well, when he said he believed the subject required a great deal more consideration than it had yet received. At one time he had turned his attention to it, and had long had in his mind a somewhat complete summation of the whole matter. It must be remembered that there were two sides to the question, the theoretical and the practical. The theory was the theory of symbolism, and the question was the different ways in which it could be employed. Practice was quite a different thing, and how far it was desirable to improve notation from a theoretical point of view was quite another matter. He had never worked out this new notation practically himself, but the whole details had long been familiar to him, and there was this great advantage—if it could ever be introduced, that it was the only system of notation, so far as he could see, which a machine could write, that is to say, you could construct a keyed instrument which as you played should record the whole of the music by the aid of this notation. The great difficulty of properly arranging instruments for the purpose of self-recording had been that you had to work out the crutches type and the quaver

type, and so on, which had been almost impossible to do. With a notation of this kind it would be perfectly simple; and he had not the least doubt that if this notation were adopted by composers, they would be able to sit down to a pianoforte, have this instrument in connection with it, play off their ideas, and have them written down in a form intelligible to the printer by the time he had finished playing. The same might be done with the different orchestral parts. This seemed to be the practical value of this method. He would not attempt to deal with the theory, as it would take too long.

Mr. W. H. Cresswell thought that some of Mr. Holman's suggestions were very valuable, and that paper prepared with due haste might be of great service to composers who had to write large scores, as it would enable them to keep their notes properly one under the other, and thus facilitate the work of the copyist and the engraver. But as a matter of practical use for writing music generally he did not see much to be gained, and did not like the look of the long Gregorian form of notes shown on the diagram. He saw many difficulties in the way; for instance, he remembered a piece of Handel's in which, while a quarter had to be played with the left hand, sixteen small notes had to be got into the same time by the right hand. It would be rather difficult to put sixteen notes into one of those small divisions. To his eye the present method of writing, with open and black notes, &c. was much more legible.

Mr. Sturges and Mr. Cresswell had been rather successful in his criticism, because instances might easily be quoted in which there were fifteen, seventeen, or some other irregular number of notes to be played in the same time as one of the ordinary subdivisions of the bar. Still, apart from the question of engraving music from such a score, he thought this was an extremely practical paper, and if it did no more, would afford composers a ready method of jotting down their ideas. Without it, these ideas might sometimes vanish, for want of being promptly recorded. He did not think it would ever do to introduce it for publication, because it did not seem so intelligible as the present system.

The Rev. T. Holmes, in reply, said his practical object was to assist composers in their work, not to substitute his notation for the present method in printed music. The system was to be judged by its adaptability to the wants of composers, not by its appearance when presented in a diagram. He understood Mr. Boussquet to say that he had long been familiar with this method in his own mind, but not that he had seen it in print.

Mr. Boussquet said he had never seen anything of the kind in print.


Mr. Sturges then proposed, and Mr. Otto Guenther seconded, a vote of thanks to Mr. Holmes, which was accorded unanimously.

The Chairman then called on Mr D. J. Slackley to read his communication.

COMMUNICATION RESPECTING A POINT IN THE THEORY OF BRASS INSTRUMENTS.

By D. J. HANLEY, Esq.

THE investigations of the late Sir Charles Wheatstone on the subject of the powers of resonance of different masses of air enclosed in chambers of various definite simple forms, were brought before us by Professor Adams in 1856, and it appeared to me that it might be a matter of interest to this Association to enter briefly upon the consideration of the resonance of brass wind instruments as illustrating Wheatstone's laws. There is very commonly a vagueness used in the description of such instruments which I submit is misleading, they being usually considered to be cones, or cones combined with cylindrical tubing, neither of which descriptions properly apply. And further, they are commonly considered to be of necessity in tune, that is, in just intonation, having the vibrational numbers of the notes that may be produced from them without altering their length, in the proportion of the numbers, 1, 2, 3, &c. As so great an authority as Prof. Helmholtz writes ('Sensations of Tone,' pp. 111, 441): "Horns and trumpets have already naturally just intonation," and "brass instruments naturally play in just intonation, and can only be forced to the tempered system by being blown out of tune," it seemed to me worth attention that this must be taken only as being perfectly, and not generally true—that is, that though the ideal brass instrument has such characteristics, this ideal is not necessarily attained to in practice. The relative and absolute numbers of vibrations of the first eight tones required on a brass instrument, taking the 4 feet C of 168 vib. as the fundamental note, are here given, with the corresponding wave lengths:—

Velocity of sound $\left\{ \begin{array}{l} 1,120 \text{ feet = } \\ 34,100 \text{ metres} \end{array} \right\}$ per second at 40° Fahr.				
Note.	No. of Vibrations.		Wave Length.	
	Relative.	Absolute.	Relative.	Absolute.
	1,000	1	$\frac{1}{4}$	12.120
	400	1	$\frac{1}{4}$	10
	315	2	$\frac{1}{2}$	17.6
	240	3	$\frac{3}{4}$	20
	213	4	$\frac{1}{2}$	28.24
	160	5	$\frac{1}{2}$	28
	144	2	$\frac{1}{2}$	30.6
	125	1	1	35.2

VIBRATION OF SOUND

IN OPEN TUBE

Scale = $\frac{1}{2}$ full size



WAVE LENGTH

$$\lambda = 2L$$



N

n

These are the notes of this bugle, and these four notes are termed in the first four, c , c' , d' , and e' , which may be referred to as Notes 1, 2, 3, and 4. Having been struck with the paradoxical deviations from this succession of correct intervals, I endeavored to determine, experimentally, the positions of the nodal points, or rather surfaces, in wind instruments, to give myself a basis for the further consideration of the subject, and the general result I will endeavor to illustrate to you.

For the purpose of leading up to the somewhat complicated condition of vibration especially before us, it may be well to give a few minutes to the consideration of some of the more simple forms. Diagram 1 roughly shows the characteristics of sound vibrations in free air, or in a tube of equal section throughout. Points where the air is at rest, or nodal points, alternate with points where it is in a state of maximum motion, and the air alternates nodes is in a state of maximum compression and maximum rarefaction (shown by difference of tint): the condition of any node varying with the motion of the air on each side of it, which is in contrary directions. The distance between any two nodes is a ventral segment, and the distance between two nodes that are in the same condition is the wave length, which, for any given note, is equal to the velocity of progress of the wave divided by the number of vibrations producing that note; the diagram is

to scale for $\text{C } 512$, $\frac{1}{2} \text{ ft.} = 20.25 \text{ ins.}$ A node being a

point of no motion, but of reflection, a tube may be closed at such a point without influencing its note, but at an other point, and only those notes can be sounded on a closed tube which have a node in the position of the closed end.

Illustration.—Resonance of an open tube to the note C 512, the tube being half the wave length and a nodal surface establishing itself in the centre of the tube. The position of the node can be proved by sinking the tube half its length in water, the resonance being at its maximum when the water-level corresponds exactly with the position of the node. By this method of experiment, which I believe is new, and is peculiarly applicable to tubes of varying section, the positions of the nodes in the nose and bugle shown on diagram 2 were determined. Combining four such half-wave lengths of C 512 we get a tube of the length represented in the diagram, which gives us its lowest note C 128 and also the notes 2, 3 and 4.

From this we find that the lowest note which an open tube sustains has a wave twice the length of the tube, and that it also reinforces all notes whose vibrational numbers are 2, 3, 4, &c. times that of the lowest note; whilst the lowest note on a closed tube has a wave four times the length of the tube, and that such a tube gives only the notes having the vibrational 1, 3, 5, &c. There is another simple form, as well as the open tube, giving resonance to the notes 1, 2, 3, 4, &c. and this is the case: a note

open at its base and complete to its open, where it is of course closed, giving a fundamental note of the same pitch as an open tube of equal length, and the harmonics, or partial tones, in the same order of increase, 1, 2, 3, &c.

Diagram 2 shows the positions of the nodes and centres of ventral segments in an open tube and a cone of the same length, for the notes 1, 2, 3, 4, 1 being C 128, with wave length 165 in. The effect that the distending size of the cone has upon the position of the nodes may be traced. The commands on the dotted lines above each figure grouped together and marked N show the positions of the nodes, and those underneath, the positions of the centres of the ventral segments. Whilst the positions of the centres, or points of maximum vibration of the ventral segments remain the same as in the tube, the nodes are gradually farther and farther apart, until at the open of the cone is a node common to all the notes. The centres of the ventral segments is thus no longer the centre of the distance between the nodes (compare open N 1 with cone N 1 &c.).

Before comparing these general results with the case presented by brass-instruments, we may consider whether they are influenced appreciably by the action of the lips, and it will be found that whether the lips or a tuning fork be used the effect is the same.

Illustration.—A cylindrical tube 58 inches long, blown by the lips in the same manner as a bagge, gave the notes 1, 3, 5, 7, &c., the same as it would give as a closed tube excited by forks, and a small beating horn with pitch c' gives an excellent resonance to the fork c' directly the mouthpiece is closed by touching the water surface. For musical purposes, such a tube as the one just tried (becoming, on being placed against the lips, a closed tube) is sufficiently excited, by reason of its pipe tone, as well as by its giving only the odd intervals. The cone gives the required intervals, but it does not be used by the lips in its complete form. It is approached very closely by the shaw, bassoon, and contrabassoon, but these instruments are used with a double reed, which may be considered to be practically at the apex of the cone, the diameter where the reed is fixed being very small.

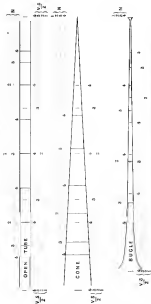
Adhering to the conical form, it would be necessary to cut off a considerable portion to give sufficient width for the action of the lips, and by so doing it becomes impossible to find a position which shall be a nodal point common to the various notes required, and the more nearly equal the two ends of the truncated cone are, the more nearly will the intervals on such a tube correspond with those of a stopped tube of equal section throughout.

Assuming the cone to be cut at the second node of note 4, and there closed by the lips, that note can still be sounded, but no other of the original series - the other notes that can be sounded may be regarded as the notes 2 and 2, made better by their nodes being drawn back, as it were, to the position of node 4 - the original notes 2, 3, 4, becoming then the first, second, and third notes of a new subharmonic series, with pitches approximately

Diagram 3

NODAL POINTS

Scale - $\frac{1}{2}$ full size



e, d', c' : thus approaching the notes of a cylindrical stopped tube. Three illustrations may be given with tubes tapering in different degrees:

1st tube giving e, d', c' .
 2nd do, e', d'', c' .
 3rd do, e', d' .

From these experiments it may be seen that by using portions of cones of different proportions with their small ends closed, it is possible to get different series of intervals varying between those of an open and those of a closed tube: that is, the first interval varying between an octave and a twelfth.

One of the examples just shown, No. 2 e', d'', c' , appears to give intervals not very far removed from those required; it may be made use of to illustrate the effect of the combination of a cone with cylindrical tubing, such tubing being of necessity used in practice in connection with valves or slides to complete the scale. I will fraction the note a fourth, from c' to g , by adding tube, and it now gives the intervals g, e', d'' in place of the g, f', d'' required, or the ratios 1, $\frac{11}{8}$, $\frac{3}{2}$ in place of 1, $\frac{9}{8}$, $\frac{3}{2}$, the second interval being actually greater than the first; again, it may be altered by the addition of sufficient tube to give its original fundamental note, c' , as the second. This is done by adding half a wave length, so as not to disturb the position of the nodal point at the end of the cone. The intervals are now approximately 1, c', f', c'', d'' , quite sufficiently out of tune to be readily noticed.

Seeing that a bugle, although it has a considerable diameter at the mouthpiece, may nevertheless be in tune, it appears that its various nodal points cannot be in the same positions as those in the cone. On diagram 2 is represented a bugle of the same pitch as the open tube and cone, with the positions of its nodes and semi-virtual segments as determined by experiment with tuning forks. Comparing on diagram the bugle and cone the fourth nodes of note d in each, it will be seen that on the bugle the node is further from the open end than on the cone, in consequence of the bugle tapering more rapidly. The nodes of note f show this still more clearly (compare lengths from mouthpiece and apex, as well as from open end). From mouthpiece to node the length is more nearly equal to that between similar nodes on cylindrical tubing than to that between similar nodes on the cone, but from node to mouth or open end, is greater than on the cone, the bugle opening more rapidly. Thus, then, by altering the proportions of the different semi-virtual segments of which such an instrument may be conceived to be built up, the positions of the nodes may be so arranged that there is a node for every note at the mouthpiece as required, and according to that is more or less perfectly affected, will the instrument be more or less perfectly in tune. The question of quality of tone is intimately connected with this, but it would be impossible to enter upon it without taking up too much of your time. It was indeed just now that a wind instrument might be conceived to be built

up of its various semi-ventral segments. This one is so divided for the note c'' 512 according to the diagram, and it will be found that by blowing at any one of the nodal points with any length of the tube containing an odd number of semi-ventral segments, the note c'' can be produced. The total number of pipes and combinations that can give this note is 18, but a few illustrations will suffice.

In conclusion I would only say that in reed instruments it appears to me we have very interesting illustrations of some of the most beautiful points in the theory of wave motion.

* The discussion of this communication was postponed until the following month, in consequence of the illness of the hearer.

MARCH 4, 1878.

R. H. M. BOSANQUET, Esq., is the Chair.

DEFERRED DISCUSSION ON MR. BLANKLEY'S
PAPER.

THE CHAIRMAN said, Mr. Balfour, who had intended to read a paper that evening, was through serious illness unable to come, and therefore the proceedings would commence with a discussion on the paper read last month by Mr. Blankley. He would first ask Mr. Blankley to give a résumé of the substance of his paper. Mr. BLANKLEY having done so,

THE CHAIRMAN said that, although not practically acquainted with brass instruments, yet he had for some time been occupied with these questions, and he naturally looked on this investigation with great interest. It seemed to him that the most striking novelty in the paper, which was absolutely new and he thought extremely valuable, was the mode of determining nodes of columns of air of any form by the immersion of the tube in water. Assuming that the water rose inside the tube to the same height as it did outside, you could determine the node with great accuracy, and mark off the column of air required. But there was one point which would have to be attended to, and which could be easily allowed for, and that was that the water did not stand at exactly the same height inside the tube as it did outside. In order to make a correction for this it would be only necessary to have a glass tube of approximately the same size and shape, in which you could see the exact position of the water; even that would not be perfectly accurate, but there were means by which this could be corrected.

Mrs. DE FORESTER asked if this was owing to capillary attraction.

THE CHAIRMAN said, Yes. As a practical method he was convinced this would supersede every other. The old method, whereby a membrane was let down into the tube with sand upon it, and you were supposed to find out the node by the cessation of vibrations, was unsatisfactory in many respects. The presence of the membrane certainly altered the relations of the portions

of air which lay on either side of it, and he did not know that you could assume that the position of things was even approximately the same when the membrane was there as when it was absent. There was also another law which Mr. Halkley had associated, which seemed to him very important. He had for some time been doubtful of its truth, and it was only, as he conceived for the first time, that he succeeded in setting it to his own satisfaction, last summer, in the case of the oboe and clarinet. He had found that in those instruments which had a mouth mechanism and where all the notes were produced by the same mouth mechanism, the pitch used for the natural note was always exactly the same as the pitch of the vibrating column of air. Now that was not at all to be assumed as a matter of course; in fact, in organ reed pipes, the resonance of the column of air was nowhere near the note in pitch. They were generally a 4th or 5th apart, and in some classes of pipes almost an octave apart. The mathematical bearings of these relations would, he believed, be of great interest, but, at all events, it was something to be secured by an competent a consciousness of brass instruments as Mr. Halkley that this law holds for them, as was simply demonstrated last time. So far as he knew, it had not been formally demonstrated before. In the case of fine organ pipes, which were somewhat analogous to those instruments, having adaptable mouth-pieces, he had formerly been under the impression that the spoken note of the fine pipe was a little higher than the note of principal resonance, although he knew it could be made lower. If you took a stopped diapason pipe and altered the form of blowing you could make it speak a 4th or 5th below. Lord Rayleigh and himself ultimately found that the law in question prevailed in the case of organ pipes; viz. that the pitch was always the pitch of the resonating chamber. He had also ascertained that this law held in an accurate manner in the case of the oboe and clarinet.

Dr. Schen regretted very much that he had not been present at the last meeting, but he had acquired some information from the few words of remark which Mr. Halkley had given. He might say that he had made some experiments on conical tubes himself, and it was quite correct to say that the note of a harmonic ought to be a true cone, and when he made a contrabass he began with that datum. He drew it out on a long board, as with that method got a correct harmonic scale. He could not do so, however, with a harmonic, because when the holes were bored in the correct positions they were quite unobtainable. It might perhaps be done, but he had not succeeded in doing so, and the only way he could get an ordinary harmonic bowed as so is bring the harmonic cones correct was by making it of three cones, one on the top of the other. There must be a continuity which spread out and then shrunk down again three times in the bore, something like the diaphic brass made by Freund. He succeeded pretty well with the contrabass, first taking the case

and then putting the holes in the right positions, and so he pronounced the law held correctly, but in the bassoon he could not do so.

Mr. BRANTER said he believed Dr. STONE had particularly investigated the bassoon; he had no doubt that the side holes being of considerable length in proportion to the diameter would have a great effect in altering the pitch.

Dr. STONE said that was the great point. Some time ago, he read a paper before the Physical Society, in which he showed that if the side holes were of considerable length compared with the main bore down which the vibrations were passing, there ceased almost to be an opening to the pipe, and there came a time when secondary vibration was set up in the side pipe and very little air got out. He had made numbers of experiments, and wasted a great deal of time upon this subject, but could never succeed in making a bassoon speak true with short diaphragmatical holes; they all required to be of considerable length. There was great friction in these holes, and very little air got through, but of course it made a weakness in the main tube, and thereby no doubt determined the note spoken. He had made a bassoon of a single cone with the holes in the right place, but it was quite hopeless as a practical instrument. Then he had tried again and again, and at last he found by intentionally flattening the cone, until it became approximately a triple cone, the notes came right. The best bassoon which he had had made abroad was not at all a true cone, but really consisted of three interlapping cones. He knew as a matter of fact also that the only maker who had ever succeeded in making what could be called a perfect instrument, old Savery, whose bassoons would fetch any money, had twenty-one different boring-hits for the lower joint alone.

Mr. BRANTER said the form of the reed would have some influence.

The CHAIRMAN wished to point out that there was an influence not usually taken account of by those who calculated the lengths on rough principles, which must be taken into account if there was to be any accurate reasoning on these subjects at all. The influence of it with which they were most familiar was the correction for the open end of an open pipe. The open pipe did not behave as if it were of its true length, but as if it were increased by a certain quantity. The theory of this increase of length was very complex, and it would be useless to attempt to enter into it, but one could imagine that the currents of air did not spread out instantaneously from a hole or from the end of a pipe; there was no discontinuous connection between the outer air and the pipe. But the currents might be imagined to flow in curved lines, and the effect was the same as if the tube were a little longer than it actually was. The amount of this addition for an ordinary circular hole forming the end of a tube was a trifle more than half the radius of the hole. He took it to be $\frac{35}{100}$ of the radius

of the open end, which you must add to the length of the pipe to make a fictitious pipe which would give the real note. If on the contrary you had a resonator in which the air was separated from the outer air by a plate and the hole was in the plate, then the following effect takes place. On both sides there are currents, converging on the one side and diverging on the other, and the total correction is that case is twice what he had just given, or a little more than the radius of the hole, so that if the holes in the side of an instrument were in a thin plate $\frac{1}{16}$ th of an inch thick, and if you had a hole half an inch in diameter, the correction would be equivalent to a tube just a little more than half an inch long. You could never make an instrument in true conical form by calculating the position of the holes, theoretically, without taking account of these quantities which had to be added on to the various lengths, and when you came to take account of them it probably became very different from the ideal you started with, so that the failure to satisfy theoretical conditions need not arise from the failure of the note, but may likely from something connected with this theory of the holes, which was at present very little understood.

Dr. BRUCE remarked that the contrabassoon was really 36 feet 4 inches, instead of being 34 feet as it should be theoretically.

Mr. HANCOCK SMITH thought the nodal points arrived at by Mr. Bickley were not necessarily those found in the tube when it was blown through. He had tested the tubes simply as resonating bodies, but when the current of air was passing through them he questioned whether the nodal points would be the same as he had determined by means of a tuning fork.

Mr. BICKLEY, in reply, said the correction the Chairman had spoken of was no doubt very necessary, and it had been made in his experimental logic, although he had not gone into details with regard to it. If those corrections were not made the lengths would be altogether out of tune and each of the segments would be very much flatter than was intended. That correction Helmholtz gave as the radius into $\frac{1}{2}$, and he had found by experiment that it agreed very closely with a tube of equal section either cylindrical or square, but with conical tubes it did not agree at all. He had made a great many observations for the purpose of establishing a rough practical rule, and probably when the small end of the tube was very small less than the wide end, when, in fact, you were dealing with a conical vessel with a small bit cut off the end, there was no approximation at all. So that when you departed from a cylindrical tube the correction became useless; the contraction of the orifice seemed to enter into the question much more largely. With regard to the difference between the nodal points, in a still column of air, and a tube which was being blown, there was practically, he believed, no difference at all. The nodal points and centres of ventral segments were determined on the length by resonance, but when you put the lips to it, and obtained the

vibration of a wind instrument, you got exactly the same results. No doubt there were little corrections to be made: for instance, there was a varying temperature at the mouthpiece end it was always higher than at the bell end; and there was another cause of discrepancy from the theoretical view, and that was the skin friction of the air against the sides of the tube. That had a decided influence. He had measured it on the trombone, where there was a long length of cylindrical tube of small diameter, and it apparently altered the wave length about one per cent. The question with regard to the tube controlling the reed or the reed controlling the tube had been touched upon by the Chairman, and he might remark that Helmholtz, in his work on the 'Sensations of Tone,' spoke rather vaguely on this point. He spoke of the action of the lips as "tissues heavily laden with watery matter," and as if the instrument controlled the vibration of the lips. But this could not be the case, because if it were so it would be impossible to play a note on a trumpet; you could play the difference of a semitone with the lips instantly, so that you certainly controlled the tube by the lips. The lips did not vibrate through the whole length; with a small instrument to get high notes you needed a small mouthpiece, which had the effect of making the vibrating portion of the lips much less than when playing a bass instrument with a large mouthpiece. As far as he understood the action of the larynx in singing, he believed the action of the lips in a wind instrument was exactly the same. As you blew the higher notes the vibrating portion of the lips got shorter and shorter, though no doubt there was also a muscular tension which altered the rate of vibration, although the mouthpiece fixed the length to a certain extent, yet when high notes were being played, even with the same mouthpiece, the portion of the lips which vibrated was much less than when lower notes were produced.

The Chairman referred to Helmholtz's correction for the open end of a pipe, viz. $\frac{1}{2}r$. Helmholtz obtained it by means of the hypothesis of hemispherical divergence. Lord Rayleigh and himself had gone fully into the matter, and came to the conclusion that this correction was much less than Helmholtz supposed. Lord Rayleigh adopted the figure $\frac{1}{4}$ of the radius, whilst he himself adopted $\frac{1}{8}$; so that there was not much difference between them.

Mr. Sturges added that in dividing large cones to determine the nodal points in water, it was necessary to make this correction in each segment. He commenced by taking Helmholtz's figure, but he then found on building up the cone again that it was considerably longer than the original cone. He then found by experiment that the correction should be about $\frac{1}{8}$ of the radius, and he believed that would be correct when the tube was conical.

The Chairman said that both Lord Rayleigh and himself had published papers on the subject in the 'Philosophical Magazine.' He then called upon Dr. Stowe to make a contribution.

Dr. Brown said he had not been able to complete the experiments necessary for the paper he had promised to read at the next meeting, and should therefore be obliged to defer it. But as he was informed that Mr. Huxley could not be present to-day, he thought it might be interesting to bring before the members what he had done in another direction. In the first place he had a series of tuning forks forming a tonometer, according to Scherller's plan, and as there had been a great deal of discussion on tonometry, he thought the members would be interested in seeing the apparatus. The tuning forks had been made from Mr. Ellis's designs and calculations. It was a series of 65 tuning forks, beginning with one of 314 vibrations and going up to one of 812. If 64 was multiplied by four, each varied by four vibrations, and you would have the whole of them in the same equidistance. You had here a very delicate test, and a very convenient one, for he had taken forks made on this principle in various public places where music was performed—to the Opera, for instance, and you could accurately pitch the pitch of every instrument as it came out, without making yourself a nuisance as you would do by sounding a reel. He believed these 65 forks required a small correction to be applied to them, because they were originally based on an instrument made from a reel, and it appeared now from recent researches that the reel was more liable to error than the tuning forks themselves. It was easy, however, to apply a correction to them. In the second place, Dr. Stone brought forward a couple of claviasts which he had had constructed, in which he had 19 notes to the octave, but without altering the fingering in any way, so that whilst any ordinary clavierist could play it easily, yet you had as many duplicate notes as were required for bringing the notes into true intonation. For instance, there were two C's, two F's, and so on. The claviasts were made of india-rubber, which was a new material for this purpose. He had also done the same with a harp.

Mr. Huxley asked if Dr. Stone had a list of the 19 notes he had made.

Dr. Brown said he had unfortunately not brought the list, but he thought the instrument possessed all the notes required, though the G's and A's were not yet quite perfect.

The Chairman asked if the notes were tuned to mean tone or just intonation.

Dr. Brown said, to mean tone, he thought it better to begin with that first, as people were more accustomed to it, but he hoped in the end they would get to a just intonation.

Mr. Huxley thought it would be rather awkward if one of these instruments were played in an orchestra with another one not possessing these extra notes; it might lead to rather unpleasant combinations.

Dr. Brown said, he did not think so. There was really more power of adaptation in an orchestra than many people supposed,

and he believed the instruments played much more nearly in correct tune than was generally believed. What was wanted, however, was, that some one should go over the scores and mark down where notes should be sharpened or flattened. He did not think the question of suspensions, which had been sometimes referred to, would lead to the difficulty which had been supposed, because a player could go from one note to another with the greatest ease, and nobody would hear it; he had in fact heard and seen it done. The first point seemed to be to give the power of correcting notes, and then to give the performers an indication on their music which of the two notes was to be selected each time.

The Chairman, on moving a vote of thanks to Dr. Stone, said the principle of Schellén's tonometer was well known, and it was exhibited at South Kensington in another form some time ago. His own feeling about it always had been that unless you had continuous tones you could not get enough of the beats counted, and if you could, it was no use trying to count them for a long period unless you had a very good pendulum. His impression was that anything short of the pendulum of an astronomical clock was really worth nothing at all in these determinations. With regard to these diatonic, it was very useful to be able to shift the pitch. He had now some little experience in the orchestra, and he thought that every player must feel that it was very hard upon him, when perhaps the pitch of the orchestra was a little different from that usually adopted, that he could not shift the pitch of a wind instrument at all. You could do very little with the lip, particularly if the orchestra went sharp. He thought something which gave you a greater amount of elasticity, so that when you found the note was not in tune you could correct it by your ear, was a most valuable thing. This improvement tended to that result, and would therefore be very useful.

Mr. Evans then made some statements with regard to his experiments on tuning-forks and counting beats.

Dr. Brown corroborated what had been said with regard to the accuracy of an accurate pendulum. Professor MacLeod had found that an error of three seconds a day in a pendulum vitiated the calculations entirely.

The Chairman said that some time ago he intended to take up this investigation, and the first thing he did was to provide himself with an astronomical clock and set to work to rate it; that was some months ago, but he had not got beyond that stage yet.

Votes of thanks were then passed to Dr. Stone, and to the Chairman for presiding.

APRIL 1, 1902.

CHARLES EDWARD STEPHENS, Esq., is the Chair.

**THE GALIN-PARIS-CHAVÉ METHOD OF TEACHING
CONSIDERED AS A BASIS OF MUSICAL EDUCA-
TION.**

By GEORGE W. BELLAS, Esq.

It is an apology to be necessary for bringing before a learned society like the Musical Association the details connected with teaching, & is, I think, forced in the extreme importance, both from an artistic and professional standpoint, of a sound basis of musical education.

Most of those who are engaged in teaching will, I think, agree that the heaviest portion of their task is due to the lack of sound elementary knowledge on the part of their pupils. Whatever the particular branch of art followed, all the drudgery and half the labour of teaching would be obviated, if, to use a metaphor, the raw material were properly rough-hewn before it came into the artist's finishing hands. The object of this paper is to introduce to your notice what is considered to be an improved method of teaching the rudiments of music. Its guiding principle is that vocal music should form the basis of all musical education: in other words, that a pupil should be able to read music as he reads his language, before being allowed to touch an instrument. 'Lock up your pianos,' says the method, 'in order the sooner to learn music.'

This paper will, I fear, tax the patience of those members to the utmost who are of opinion that no improvement in teaching is either called for or possible. But as a simple means of ascertaining the facts, I would suggest the following experiment.—Take at random twenty young ladies, each able to sing and to perform very nicely upon the piano, produce a new ballad, or part-song, and ascertain by experiment how many can vocalise it at first sight without assistance of any kind from an instrument. From my experience, which may have been unfortunate,

I should say that two at the most—possibly only one—would succeed. Perhaps this estimate may be modified in the discussion that may arise; but the general inability to read music without accompaniment points to the danger of nurturing the mechanical at the expense of the intellectual faculties. The few who fully satisfied the above test would, I think, be found to possess a sort of musical intuition, and would be unable to impart their skill to others not similarly gifted.

But a method of teaching, to be worthy of the name, should be framed, not with regard to the capabilities of talented persons, but in such a manner that those possessing average or even inferior abilities may pursue the study with some certainty of attaining a definite result. It is the claim to have found this desideratum which renders the Galla-Parla-Cherel method of teaching not unworthy of your attentive consideration.

I must content myself with a very brief outline of the history of the method. Jean Jacques Rousseau is credited with having laid the foundation of it in 1748, when he advocated the *Tonic* principle for teaching vocal music, accompanied with a figure notation. Admissible as were his ideas, they were not practically worked out. It remaining for Pierre Galla, a Professor of Mathematics at Bordeaux, to do this, and he published the result in 1818 under the title "*Nouvelle Méthode pour l'enseignement de la Musique*"—a handbook for the teacher. To it Rousseau's figure notation was perfected, and the admirable theory of musical time which Galla called the *Chronometrist* was developed. Galla died in 1822, and his work was carried on by Alfred Parla, originally a lawyer by profession, who made some important improvements in the method of teaching musical time. His sister married Emile Cherel, a doctor in the French Navy, and these two elaborated the practical method of teaching which I have now to explain. It is, thus, the result of the labours of Galla, of Parla, and of the two Cherels: hence its cumbersome title, which is often abbreviated to '*Cherel Method*.'

For teaching purposes use is not made of the vocal Staff notation. This notation, admirable as it is for keyboard instruments, presents many needless difficulties to the beginner in vocal music. But as this notation is in general use, the course of instruction is not considered complete until the student is thoroughly conversant with it. By commencing with an older notation, it has been found that not only is the desired result—to read rapidly and correctly from the staff—more quickly and surely attained, but success is placed within the reach of a much greater number.

I now proceed to give a rough sketch of the practical method of teaching, and in order to avoid lengthy descriptions, a few diagrams have been prepared, portions of which will be recalled.

Acting upon a sound educational maxim, the Galla-Parla-Cherel method analyses the matter to be taught as much as possible, and attacks and overcomes difficulties one by one.

The first broad division of music is into *Tone* and *Time*. Each of these elements, if I may so call them, presenting *peculiar difficulties*, is taught *separately*. I propose following this order in my paper, and shall first explain the mode of teaching *Tone* or *Intonation*.

The method is based upon the *Tonic principle*: that is, upon the identity of a tone, whatever the pitch of the key-note may be. The important thing in music is held to be the *relationship* of sounds to the key-note, and not the *absolute pitch* of an instrument, which may vary with each change of temperature.

The *major diatonic scale*, consisting of seven sounds, is accepted as the basis of modern music. It is expressed by the *distinctive Latin numerals*, whatever the pitch at which 1 or the *tonic* may be taken. As human voices extend through about three of these series or octaves, it is necessary to distinguish between them. The low series has therefore a dot under each figure; the medium one is in plain figures; and the high series has a dot over each figure.

	Lower Octave							Middle Octave							Upper Octave						
Written	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Sung	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

The rule for employing them is to select that series which necessitates the smallest use of dots above or below. The words *one, two, three, &c.*, being inconvenient to vocalize, it has been thought desirable to retain the *sol-fa* syllables of *Orinda*, which the mind very rapidly associates with the figures.

Having learnt to sing, at any pitch, the tone of the major scale in stepwise succession and that of the tonic chord—the result of one lesson—a lengthy pause is made, in order to impress these important though simple acquirements indelibly upon the pupil's mind. The intervals of the diatonic scale and of the tonic chord are the only ones taught as intervals; from this knowledge all future skill in reading is built up.

Particular prominence is given to the tonic chord, which is practised until, any one of its notes being sounded, any other can be instinctively sung or even thought of. In order graphically to demonstrate the pre-eminence, the scale is dissected, the tonic chord being placed in the centre, the dominant chord is placed on the right, the subdominant chord on the left:—

		5
1	1	
		7
4		
	4	4
4		
	3	
		2
1	1	

The facility with which the harmonic notes of the scale (1-2-3) can be kept in mind is termed to account by using them as '*points d'appui*,' or aids towards singing the 'notes of motion' contained in the chord 7-2-4-6.

Almost Paris shared the notes of the tonic chord to planets, each having one or more satellites dependent upon it. The tonic, the first in importance, has two satellites, 2 above and 7 below; the dominant, the second in order, has only one, viz. 6; and the mediant has also only one, viz. 4.

The existence of this close relationship will not be questioned in whatever light it be regarded. The following is the practical mode of utilizing it. If it be required to sing the interval 3-4, the pupil, having sung 3, thinks of the note of the tonic chord on which 4 leans, which is 2, and from it measures the major second 2-4, which he is quite familiar with as the stepwise succession of the scale. If it be required to sing the interval 3-6, the pupil thinks of 2, and measures the major second 2-6 from it. In the case of the interval 4-7, the singer first thinks of 2 and then of 1, from which the minor second 1-7 is measured.

This process, which may be applied to any interval, and which may be described as singing the unknown by mental reference to the known, forms one of the distinctive features of the Chervé method, and enables it, after the first lesson, to dispense entirely and for ever with all assistance from either the teacher's pattern or an instrument, both of which aids are expressly prohibited. The following phrase, in which the tonic chord is never actually taught upon, will serve to make this clear. The large figures* show the notes to be sung, the small figures the '*points d'appui*' to be thought of:—

1 2 3 4 5 6 7 1 2 3 4

The process of thinking sounds, slow as it may appear at first, rapidly becomes instinctive, and by hearing the tonic chord in mind, the singer preserves not only the pitch but also the timidity of a tone.

In the first diagram special prominence is given to the three major chords of the scale. But others exist which it is necessary to learn to sing in any position. The principal chords of the 5th and 7th are presented in the next diagram, which is of great use in class teaching. The same construction and method of teaching is pursued; every note not in the tonic chord is measured from it.

* For class teaching, two pointers are used: the teacher teaches a figure of the diagram with a black pointer when it is to be sung; and with a white pointer when it is to be thought of. The white pointer is gradually dispensed with as the pupils gain confidence.

pass. To conclude, the large figures should be sung to the syllable *la*. By following this gradual and systematic course, no interval that may be encountered is found too difficult for the learner to sing without extraneous aid of any kind.

In subsequent exercises every possible position or inversion of the chords of the diagram is taught in the same manner.

I now come to the theoretical and practical treatment of the Minor Mode, to which this method gave great prominence. Without entering upon an elaborate history of the various changes which the minor mode has undergone, I will present in one diagram five varieties.

No. 1	No. 2	No. 3	No. 4	No. 5
6	6		6	6
5	5		5	5
4	4	4 4	4	4
3	3	3 3	3	3 3
2	2	2 2	2	2 2
1	1	1 1	1	1 1
7	7	7 7	7	7 7
0	0	0 0	0	0 0

No. 1 is simply the scale of *ut* major commencing on the superoctave. It is without a leading note.

No. 2 is considered to be the true minor scale, having two minor modes, a leading note, and a minor second 4-3, which gives it a distinct character. It is the minor scale most suited to harmony. The difficulty of singing the minor second has led to the following modifications.

No. 3, the minor scale of Guido d'Arezzo. It has two minor modes, and in descending, a leading note. The suppression of the minor second renders it incomplete.

No. 4 is neither major nor minor. It belongs to the minor by its low mode, and to the major by its high mode. The lower tetrachord belongs to the scale of *la* minor, the upper tetrachord to the scale of *la* major.

No. 5, in ascending, is similar to No. 4, and in descending it is similar to No. 3. This is what is called the "modern minor," and is unsatisfactory from every point of view.

As the Guido-Pere-Chené method possesses the means of singing the minor second (or any other intervals) with ease and precision, there is no longer any reason why the best possible minor scale should not be adopted. Accordingly No. 2, with the sharpened seventh, is selected as the typical minor mode for both melody and harmony.

In teaching is introduced as soon as the chord 6 1 3 has been thoroughly learnt in every position in the major mode. The

lower half of the scale, from ♯—3, possesses no interval different from those met with in the major mode; so I need not dwell upon it, but pass at once to the upper half containing the augmented second.

The first step is to learn the true ♯ ♯ ♯, from that of 1 ♯ 1; and then the following process is gone through,—

$$\left. \begin{array}{l} \sharp \sharp \sharp \quad 3 \sharp 3 \\ \sharp \sharp \sharp \quad 4 \sharp 3 \\ \sharp \sharp \quad 4 \sharp \end{array} \right\} \text{and vice versa.}$$

This has been tabulated by Madame Chord in her usual systematic manner, in a large number of exercises.

As in the major mode, so in the minor, a lengthened piece is made on the study of the tonic chord, in this case ♯ 1 3, from which all intervals of the minor scale are measured, in the same way as those of the major scale are from 1 3 5. The various chords in the minor scale are classified, giving rise to the following table, which closely corresponds to the major one given above.

MINOR MODE

CHORDS OF THE FIRST						CHORDS OF THE SECOND					
1	(♯)	♯	1	(♯)	♯	♯	(♯)	♯	1	(♯)	♯
4	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯
1	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯
1	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯
1	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯
4	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯
♯	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯	♯

These chords are woven into exercises similar to those in the major mode of which the following is an example:—

♯ 1 3 5				♯ 1 3 5				♯ 1 3 5				♯ 1 3 5			
♯	1	3	5	♯	1	3	5	♯	1	3	5	♯	1	3	5
♯	1	3	5	♯	1	3	5	♯	1	3	5	♯	1	3	5
♯	1	3	5	♯	1	3	5	♯	1	3	5	♯	1	3	5
♯	1	3	5	♯	1	3	5	♯	1	3	5	♯	1	3	5
♯	1	3	5	♯	1	3	5	♯	1	3	5	♯	1	3	5
♯	1	3	5	♯	1	3	5	♯	1	3	5	♯	1	3	5
♯	1	3	5	♯	1	3	5	♯	1	3	5	♯	1	3	5

which requires no further explanation.

These minor mode exercises correspond exactly to the major mode ones, and should be alternated with them, so that the singer may have a familiar acquaintance with the effects of similar chords in the two modes.

I now come to the subject of modulation, which I must touch upon as briefly as possible. The word 'modulation' is

need to suppose (1) change of key, (2) change of mode, (3) change of both simultaneously in the course of a tune. Each of these changes may take place without the introduction of notes foreign to the original key. Mathis Lussy, in his '*Exercices de Piano*' shows how a tune may modulate to five different keys without departing from the notes of the original one, and Gelin also gives some interesting examples of the same kind in '*Soprano Méthode*.' Generally, however, the new key is more rapidly and easily established by making use of the notes peculiar to it, and not contained in the original key. On the other hand, it is well known that modulations may be very liberally introduced into a page of music without seriously affecting the tonality. Notwithstanding this, it is, for vocal purposes, convenient to consider all notes foreign to the original key as indicative of modulation, although it may be instantaneously cancelled.

Before entering upon the practical exercises on sharps and flats, the Gelin-Parsi-Chavé method thoroughly explains their origin and function—in other words, the formation of the various scales by their means. In order to prevent misapprehension, I must again remind you that when music is written in the figure notation, it is always written in either the key of *ut* major or of *la* minor; and when reading from the staff, the singer always mentally transposes it into one or other of these two typical languages. In this way all 'essential' or 'fundamental' sharps and flats—i.e., those written in the key signature, are done away with: it is only when modulation more or less prolonged takes place, that the singer is troubled with them at all.

The notation of sharps and flats is eminently simple and graphic: an accent sign drawn through a figure shows that it has been sharpened; an accent grave that it has been flattened. In reading, the vowel sound *e* is reserved for sharps, that of *ou* for flats.

In the centre of this table is the scale of *ut*, on the right are keys with sharps, on the left are keys with flats.

GENERAL TABLE OF THE FORMATION OF THE SCALES.

The previous *subdominants* become *notes*; the *subdominants* become *leading notes*.

♭	♭	♭	♭	♭	♭	♭	♭	1		♯	♯	♯	♯	♯	♯
♭	♭	♭	♭	♭	♭	♭	♭	2		♯	♯	♯	♯	♯	♯
♭	♭	♭	♭	♭	♭	♭	♭	3		♯	♯	♯	♯	♯	♯
♭	♭	♭	♭	♭	♭	♭	♭	4		♯	♯	♯	♯	♯	♯
♭	♭	♭	♭	♭	♭	♭	♭	5		♯	♯	♯	♯	♯	♯
♭	♭	♭	♭	♭	♭	♭	♭	6		♯	♯	♯	♯	♯	♯
♭	♭	♭	♭	♭	♭	♭	♭	7		♯	♯	♯	♯	♯	♯
♭	♭	♭	♭	♭	♭	♭	♭	8		♯	♯	♯	♯	♯	♯
♭	♭	♭	♭	♭	♭	♭	♭	9		♯	♯	♯	♯	♯	♯
♭	♭	♭	♭	♭	♭	♭	♭	10		♯	♯	♯	♯	♯	♯
♭	♭	♭	♭	♭	♭	♭	♭	11		♯	♯	♯	♯	♯	♯
♭	♭	♭	♭	♭	♭	♭	♭	12		♯	♯	♯	♯	♯	♯

The previous *subdominants* become *notes*; the *leading notes* become *subdominants*.

The principle on which it is constructed is so obvious, that a lengthy description is not necessary. Each ascending fifth that is taken as key-note, *S, E, G, S*, &c., introduces a new sharp on the seventh step of the scale, in order to preserve the identity of the tone of the scale of *ut*. Each descending fifth that is taken as key-note, *A, F, D, A*, &c., introduces a new flat on the fourth step of the scale.

The important fact is thus impressed upon the pupils, that every sharp and double-sharp is in effect a leading-note; while every flat and double-flat is in effect a subdominant. Theory, in this, leads an important aid to practice. For as the leading-note has always the point *d'appui* in the tonic, so a sharp has its point *d'appui* in the note immediately above it to which it leads up. And as each subdominant has its point *d'appui* in the mediant, so each flat has its point *d'appui* in the note immediately below it on which it leans.

The interval of a sharp from the point *d'appui* is taught from the pattern 1 7 1; and the interval of a flat from its point *d'appui* is taught from the pattern 3 4 3.

Sharps and flats do not always occur on neighbouring steps of the scale. It is therefore necessary to be able to pitch upon them from any interval. There is no difficulty in this if the point *d'appui* be thought of before and after each accidental. In order to facilitate this mental operation, a special study is made of each sharp and each flat in connection with each step of the scale above and below it. I only produce two studies of each sort as examples of the rest.

Pattern of SHARP or FA SHARP.

1 to <i>f</i>				2 to <i>f</i>			
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8

Pattern of SHARP or SI FLAT.

4 to <i>f</i>				1 to <i>f</i>			
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8

These exercises having been gone through, the student is led to a series of advanced exercises in which every possible chromatic combination is exhausted.

Any one who has followed the method to this point will have a tolerably clear idea of his subject, and will be able to sing at

slight size-profile of the mode written. But in order that he may never be caught tripping, it is desirable that he should be able to sing equally well with the language and symbols of any key, major or minor. The following diagram, which may be extended to comprise the fifteen major and minor keys, is of great value in imparting this facility, and also shows graphically the linking of major and minor scales by means of the common notes of their chords.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80																				

Major taxa are enclosed in round brackets, minor taxa in square ones. At the left of each major key is its relative value.

In addition to this, a complete series of exercises has been compiled by Madame Clève having the same end in view. These, with special studies of modulation from major to minor keys of the same kind and vice versa, complete the exercises on *introduction*.

Before quitting this subject, however, I must refer to a most valuable conference for fulfilling distant and prolonged modulations invented by Aimé Paris. When a decided modulation takes place—the dominant, for instance—the original and hence the qualitative no dominant, and average *pro les*, those of tonic. If the symbol used to express it were changed to that used for *et*, not only would the various intervals be more easily seen, but the *fe* *chery* in the old notation disappears in the *et* natural of the new. The advantage in this case is not great; but when it is a question of modulating to a key containing 3, 4, 5, 6, 7 additional sharps or flats, with possibly a simultaneous change of mode, the advantage of a uniform tonic correspondence is immense.

The notation is always effected on the last sound of a phrase or period, which is generally a note common to the two keys or scales. This sound is expressed by two symbols united by a hyphen and bracket to show that the pitch remains identical, while the first figure expresses its function in the old scale, and the second figure its function in the new. As a further assistance, the name of this combination, compounded of the names of the two symbols, is printed underneath.

The following example is selected from Donatelli's *Don Selection*.

$$\begin{array}{c} \text{A}^b \text{ Major} \\ \frac{1}{256} | 4 \cdot 72 | 32 | 12 | 4 \cdot 72 | 1+2 \cdot 72 | 1+2 \cdot 72 | 1+2 \cdot 72 | 12 | \\ \frac{1}{256} \end{array} \qquad \begin{array}{c} \text{E Major}^* \\ \frac{1}{256} | 1 \cdot 72 | 7 \cdot 24 | 4 \cdot 24 | 12 | 12 | \\ \frac{1}{256} \end{array}$$

$$\begin{array}{c} \text{A}^b \text{ Minor}^\dagger \\ \frac{1}{256} | 12 | 12 | 4 \cdot 24 | 12 | 12 | 12 | 12 | \frac{1}{256} | 12 | 12 | 4 \cdot 24 | 12 | 12 | 12 | 12 | 12 | \\ \frac{1}{256} \end{array} \qquad \begin{array}{c} \text{A}^b \text{ Major} \\ \frac{1}{256} | 12 | 12 | 4 \cdot 24 | 12 | 12 | 12 | 12 | 12 | 12 | \\ \frac{1}{256} \end{array}$$

The above, if written in the fixed language of the piano with 1 corresponding to C, would appear as—

$$\begin{array}{c} \text{A}^b \\ \frac{1}{256} | 4 \cdot 72 | 32 | 12 | 4 \cdot 72 | 4 \cdot 72 | 1+2 \cdot 72 | 1+2 \cdot 72 | 1+2 \cdot 72 | 12 | \\ \frac{1}{256} \end{array}$$

$$\begin{array}{c} \text{E} \\ \frac{1}{256} | 1 \cdot 72 | 7 \cdot 24 | 4 \cdot 24 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | \\ \frac{1}{256} \end{array}$$

This comparison shows the vast utility of the notation system, and the advantage of a tonic over a fixed non-tonic.

I will merely point to one other diagram, which graphically shows the various related keys to which modulation usually occurs. The point of departure is in the centre and is written with (1) although it may have any pitch. The keys, by ascending fifths, 2, 7, 2, do are placed above it; those by descending fifths 4, 3, 2, do, below it. To the left is the minor of the same base; to the right, the relative minor. Any tonic, major or minor, may be taken as the point of departure with the same result.

I have now to enter upon the important matter of musical time, the simplest element of which was taught in the first lesson. But as a knowledge of modulation is, at first, imparted without time, so time is at first taught without reference to intonation, by means of an admirable 'Time language' invented by *Alfred Paris*.

The essential fact in musical time is considered to be the beat or 'unit of time.' It has no absolute time-value any more than the tonic has an absolute pitch, but it may have any duration the composer chooses to indicate. In the unit may be equivalent to any fraction of a minute. In order that a succession of beats or notes may become musical, the ear demands that an accented one should be heard at regularly recurring intervals. It is easily demonstrated that when this second is delayed for more than two beats, as theoretically in four-beat time, the ear is dissatisfied, and demands an accent upon the third as well as upon the first beat. This form of time is recognized because of

* E-flat major of F major. † E-flat major of G minor. ‡ Or both minor.

its frequent use, but without prejudice to the fundamental rule, that a succession of beats, to be musical, must be grouped by accent into two or three. The distance between two of these metric accents is called a measure. There are therefore, at the most, three kinds of measures—two, three, and four-beat.

I have now to explain the symbols by which the facts of musical time are expressed. In listening to a song, it is noticed that sometimes a fresh sound is emitted by the singer upon each recurring beat; that sometimes a sound is prolonged for one or more beats; and that sometimes the singer is silent for one or more beats, when he again resumes the air. The three obvious facts connected with musical time are, therefore—the utterance or articulation of sound, the prolongation of sound, and the cessation of sound.

To express these three ideas, three symbols and three only are wanted. We have already seen that figures have been adopted to express intonation; the black dot (.) is selected to express prolongation, and the zero (0) to express silence. Each of these signs by itself represents one beat or unit. Thus—

.	expresses 1 beat of articulation.
•	" 1 " prolongation.
0	" 1 " silence.

If it be required to express a sound of three beats' duration, one figure is used to give the pitch, followed by two dots. If it be required to express a rest of three beats, three zeros are employed. Each isolated symbol represents one beat—nothing more, nothing less.

It is obvious that the unit may undergo division. The simplest possible divider is 2, producing halves; the next is 3, producing thirds. The law of accent pervades the subdivision of the unit, that is, that sounds must be grouped by accent into two or three. A horizontal bar is drawn over the top of each group, to show that the symbols no longer express separate units, but together form one unit.

Halves may undergo the binary division, producing quarters; and the ternary division, producing sixths. Note that the division, and consequently the accent, is graphically indicated by means of smaller bars placed under the larger one. In the case of division by 2, the small bars cover two signs; in that by 3, the small bars cover three signs.

Thirds may undergo the binary division, producing eighths; and the ternary division, producing sixths. Note the essential difference in the accent of the sixths produced by dividing halves by 3, and those produced by dividing thirds by 2.

Each of these groups may, in turn, undergo the binary and ternary divisions, producing sixteenths, three distinct forms of thirtyseconds, and twenty-sevenths.

This process may be continued ad infinitum; but any group, from an infinite number that might be selected, would show

THE BINARY AND TERNARY DIVISION AND COMBINATIONS OF THE THREE OF THE ACCORDING TO THE LAW OF ACCENT.

No. 1. Unit of Three.	No. 2. Binary Root. Binary. 	
No. 3. Binary Subdivision. Quatern divided by 2. Quatern. 	No. 4. Binary Subdivision. Quatern divided by 2. Quatern. 	
No. 5. Ternary Subdivision. Quatern divided by 3. Ternary. 	No. 6. Ternary Subdivision. Quatern divided by 3. Ternary. 	
No. 7. Binary Subdivision. Quatern divided by 2. Quatern. 	No. 8. Binary Subdivision. Quatern divided by 2. Quatern. 	
No. 9. Ternary Subdivision. Quatern divided by 3. Ternary. 	No. 10. Ternary Subdivision. Quatern divided by 3. Ternary. 	
No. 11. Binary Subdivision. Quatern divided by 2. Quatern. 	No. 12. Binary Subdivision. Quatern divided by 2. Quatern. 	
No. 13. Ternary Subdivision. Quatern divided by 3. Ternary. 	No. 14. Ternary Subdivision. Quatern divided by 3. Ternary. 	
No. 15. Binary Subdivision. Quatern divided by 2. Quatern. 	No. 16. Binary Subdivision. Quatern divided by 2. Quatern. 	
No. 17. Ternary Subdivision. Quatern divided by 3. Ternary. 	No. 18. Ternary Subdivision. Quatern divided by 3. Ternary. 	
No. 19. Binary Subdivision. Quatern divided by 2. Quatern. 	No. 20. Binary Subdivision. Quatern divided by 2. Quatern. 	
No. 21. Ternary Subdivision. Quatern divided by 3. Ternary. 	No. 22. Ternary Subdivision. Quatern divided by 3. Ternary. 	
No. 23. Binary Subdivision. Quatern divided by 2. Quatern. 	No. 24. Binary Subdivision. Quatern divided by 2. Quatern. 	
No. 25. Ternary Subdivision. Quatern divided by 3. Ternary. 	No. 26. Ternary Subdivision. Quatern divided by 3. Ternary. 	
No. 27. Binary Subdivision. Quatern divided by 2. Quatern. 	No. 28. Binary Subdivision. Quatern divided by 2. Quatern. 	
No. 29. Ternary Subdivision. Quatern divided by 3. Ternary. 	No. 30. Ternary Subdivision. Quatern divided by 3. Ternary. 	
No. 31. Binary Subdivision. Quatern divided by 2. Quatern. 	No. 32. Binary Subdivision. Quatern divided by 2. Quatern. 	
No. 33. Ternary Subdivision. Quatern divided by 3. Ternary. 	No. 34. Ternary Subdivision. Quatern divided by 3. Ternary. 	
No. 35. Binary Subdivision. Quatern divided by 2. Quatern. 	No. 36. Binary Subdivision. Quatern divided by 2. Quatern. 	
No. 37. Ternary Subdivision. Quatern divided by 3. Ternary. 	No. 38. Ternary Subdivision. Quatern divided by 3. Ternary. 	

graphically the various divisions and subdivisions to which the unit had been subjected, as well as the particular accent which the group in question demanded.

The system, which has been explained by means of sign-manual familiar to you, applies whatever the symbols employed—whether figures, dots, or signs. Galle has only one rule for the division of the unit, it is—“The various fractions into which the unit may be divided are always grouped together under a horizontal bar; and the various symbols grouped together under a horizontal bar together form one unit—nothing more, nothing less.”

This is the whole theory of musical time, admirable either for its simplicity and comprehensiveness, and having its origin in the all-pervading influence of the binary or the ternary accent.

I now come to the practical method of teaching time. As before stated, one is made of Aimé Paris's time-language, which has for its guiding principle the analysis of each beat according to accent. The diagrams I shall now show you are admirably adapted for class teaching, though similar ones are contained in the books. The binary division of the unit is first taught and then the ternary; in each case prolongations and rests are separately treated.

BINARY DIVISION.

FIGURES.

1 1	1 2	12 34	34 32	12 34 34 32	123 454 323 432
1 1	1 .	12 34	2. 32	12 34 2. 32	123 454 323 42.
		etc.		etc.	

NOTES.

1 2	1 2	12 34	23 45	12 34 34 45	123 454 323 432
1 2	1 2	12 34	34 32	12 34 34 32	123 454 323 432
		etc.		etc.	

TERNARY DIVISION.

FIGURES.

123 456	12 34 54 32 34 45	123 454 323 454 323 432
123 45.	12 34 34 32 34 2.	123 454 323 434 323 2.
	etc.	etc.

NOTES.

123 456	12 34 54 32 34 32	123 454 323 434 323 432
123 456	12 34 34 32 34 34	123 454 323 434 323 343
	etc.	etc.

These diagrams should be studied column by column, and only using straight across when each form of subdivision has been

separately mastered. I must mention in passing, that these tables, complete as they may appear, only form the bare outline of the exercises on Time; in the same way that the chord diagrams are only the bare outline of the exercises on Intonation.

Before quitting the topic of musical time, I must briefly touch upon a kindred one, that of musical phrasing.

In order that a tone may exist, the ear must recognise a commencement and end to the musical phrase. The characteristic feature of a sound, causing the ear to feel that it is the last of the phrase or sentence, is that which an acoustic constitutes cadence. Cadence may therefore be called musical punctuation. But as the punctuation of speech is of various degrees, so a cadence may give us the impression of the conclusion of a phrase, a period, or a sentence. These facts are generally expressed by the following terms.—Quarter-cadence, half-cadence, and cadence (or perfect cadence). The distance between two quarter-cadences is the weakest melodic idea; and this Cheré calls 'a Rhythm.' As the beat is the unit of the measure, so the measure is the unit of the rhythm. The law of the binary and primary accent pervades the grouping of measures into rhythms; for the rhythms most agreeable to the ear are those composed of two, three, or at the most, four measures. If rhythms comprise six, eight, or more measures, the ear naturally subdivides them by two or three, in the same way that it re-establishes the accent in the minute subdivisions of the beat. Rhythms of five, seven, or eleven measures are not easily followed by the ear, and are therefore seldom employed except to produce a special effect.

From the foregoing it is evident that this method attaches a precise and constant meaning to the word Rhythm, which is elsewhere used in a vague and contradictory manner. I may remark in passing, that M. Lasey in his '*Traité de l'Expression Musicale*,' uses the word in exactly the same sense as Cheré.

The hardest portion of my task is now over. It only remains to show how the knowledge which has been acquired from the figure notation is applied to the staff.

Theoretically :—the great staff is explained together with the classification of notes by means of the various clefs.

Practically :—as soon as pupils can sing intervals from figures, with ease and certainty, they are introduced to passages of equal difficulty on the staff of five lines. From the first lesson they are taught to sing with equal facility with or on any line or in any space. For class teaching, the plain staff first used by Galla, and which he called the '*Meloplast*,' is all that can be desired:—

In the printed exercises the movement of tones is effected by means of the various clefs, which are simpler for this purpose than the key-signatures. The first series contains no accidentals, but every major phrase is thoroughly exhausted.

After the minor mode and modulations have been thoroughly mastered in figures, the subject of accidentals* is approached on the staff in such a methodical and gradual manner, that difficulties vanish before the learner.

This portion of the work is divided into fourteen series of exercises, each of which is divided into two sections.

Series 1.—A sharp, preceded and followed by the note above it, from which it is measured.

1 (bis).—A flat, preceded and followed by the note below it, from which it is measured.

Series 2.—A sharp *wang* descending, preceded by the note above it.

2 (bis).—A flat *wang* ascending, preceded by the note below it.

Series 3.—Same as Series 2, followed by a natural.

3 (bis).—Same as Series 3 (bis), followed by a natural.

Series 4.—Sharp *wang* descending, followed by the note above it.

4 (bis).—Flat *wang* ascending, followed by the note below it.

Series 5.—Sharp *wang* ascending, followed by the note above it.

5 (bis).—Flat *wang* descending, followed by the note below it.

Series 6.—Sharp *wang* ascending, without the point d'appui.

6 (bis).—Flat *wang* descending, without the point d'appui.

8 (ter).—A sharp followed by a flat and vice versa.

Series 7.—Sharp ascending chromatic interval, followed by point d'appui.

7 (bis).—Flat descending chromatic interval, followed by point d'appui.

Series 8.—Sharp *wang* from the third above it, without point d'appui.

8 (bis).—Flat *wang* from the third below it, without point d'appui.

Series 9.—Sharp *wang* from third below it, without point d'appui.

9 (bis).—Flat *wang* from third above it, without point d'appui.

Series 10.—Sharp *wang* at interval of a fourth.

10 (bis).—Flat *wang* at interval of a fourth.




Series 11.—Sharp *wang* at interval of a fifth.

11 (bis).—Flat *wang* at interval of a fifth.

Series 12.—Sharp *wang* at interval of a sixth.

12 (bis).—Flat *wang* at interval of a sixth.

* In printing accidentals on the McHugh, a piece of cardboard may be fastened at the end of the printer. When the edge is pressed, a natural is *wang*, according to the line on which it occurs, while a sharp or flat is *wang* according to the sign exhibited, thus:—

		
Natural	Natural	Flat

a B

Series 13.—Sharp sung at interval of a seventh.

13 (*4a*).—Flat sung at interval of a seventh.

Series 14.—Consecutive sharps ascending and descending.

14 (*4a*).—Consecutive flats ascending and descending.

It must be understood that I only produce an insignificant fragment of each series, which in reality comprises all the various key signatures.

The notation of the staff has now to be explained, or rather the method employed of teaching it. It is probable that the time symbols had originally a certain fixed duration; so that if the semibreve represented a second of time, the minims equalled a half, the crotchets a quarter, and the quavers an eighth of a second. Although this absolute duration is no longer observed in the use of these signs, each of the four may be taken as the unit or beat.

When the semibreve is the unit, the minim represents a half, the crotchet a quarter, and the quaver an eighth of a beat. When the minim is the unit, the crotchet represents a half, the quaver a quarter, and the semiquaver an eighth. When the crotchet is the beat, the quaver represents the half, the semiquaver the quarter, and the demisemiquaver the eighth. When the quaver represents the beat, the semiquaver represents the half, the demisemiquaver the quarter, and the hendi-demisemiquaver the eighth. This provides for all the binary divisions and subdivisions, and in such a way that the quaver may in turn represent any one of the four ideas of unit, half, quarter, and eighth.

The ternary division of the unit is then explained. It presents some little difficulty, for the usual notation possesses no distinctive sign to express thirds, but makes use of the unit already representing halves in the binary division. In order, however, that the reader may be advised of this important change in the value of the symbol, a dot is placed immediately after the sign expressing the unit. When such a dotted unit is met with, it is understood that it is divisible by three, and that the thirds are expressed by the signs usually standing for halves.

Each of the above-mentioned signs, semibreve, minim, crotchet, quaver, may be dotted in this way. When the ternary division is carried further than thirds, it is necessary to group the notes as required by means of a slur, and to add the distinguishing number. This system is wanting in clearness, for the quaver, which in the binary division expresses four distinct ideas, may in the ternary division express $\frac{1}{3}$ of the unit, $\frac{1}{6}$, $\frac{1}{9}$, and $\frac{1}{12}$. By counting the two kinds of notes and the three kinds of twelfths and eighteenth produced by the binary-ternary division of the unit, it will be found that the quaver can represent as many as 12 different ideas of musical time.

After explaining the mode of expressing prolongation by means of an altered note, a dot, or a tie, or by the three small

intensity, and of expressing silence or rest, the system of grouping notes into measures is entered upon.

As before stated, there are at the most three forms of time—two, three, and four-beat. Each of the before-mentioned eight symbols may be grouped in each of the three different ways, producing in all twenty-four forms of measures. These are expressed by certain fractions, concerning which hardly two books are agreed, so I venture to give them here.

Taking the semibreve as the unit of all the time symbols, as the whole note, or 1, the signatures in the binary division are simple enough. $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ mean that 2, 3, and 4 whole notes are contained in the measure; $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ mean that 2, 3, and 4 half notes are contained in the measure, and so on for quarters and eighths.

In the ternary division the matter is not so simple. The numerator no longer expresses the number of units in the measure, but the number of thirds, while the denominator expresses the number of these thirds to the semibreve. Thus, $\frac{2}{3}$, $\frac{4}{3}$, $\frac{5}{3}$ mean that the measure contains 2, 3, or 4 thirds, of which two equal the semibreve, and so on for the others.

The following table of time-signatures, classed under the head of Binary and Ternary, sums up the matter very completely:—

TABLE OF TIME SIGNATURES.

BINARY DIVISION or UNIT.			TERNARY DIVISION or UNIT.		
$\frac{1}{2}$	$\frac{2}{2}$	$\frac{4}{2}$	$\frac{2}{3}$	$\frac{4}{3}$	$\frac{5}{3}$
$\frac{1}{4}$	$\frac{2}{4}$	$\frac{4}{4}$	$\frac{2}{6}$	$\frac{4}{6}$	$\frac{5}{6}$
$\frac{1}{8}$	$\frac{2}{8}$	$\frac{4}{8}$	$\frac{2}{12}$	$\frac{4}{12}$	$\frac{5}{12}$

So long as the semibreve remains the standard of musical time, all these forms of time exist, though some of them are not often encountered. The six forms $\frac{1}{2}$, $\frac{2}{2}$, $\frac{3}{2}$, $\frac{4}{2}$, $\frac{5}{2}$, $\frac{1}{4}$ are capable of expressing every required combination of musical time, and it is much to be desired that all the other forms should be allowed to fall into disuse both for original productions and reprints of old works.

But the multiplicity of and confusion among the signs of the usual notation existing, is at the bottom of the Chord method to teach people to read them. It accordingly does so in a series of exercises graduated in the most systematic manner. It must be understood that time is not taught from the staff, but from Galla's *Chromastix*, and when the facts of time have been

thoroughly acquired, it only remains for the reader to discover well-known ideas in a new dress. Only one exercise is produced, as a sample of a very great number.

Before concluding the subject of time, I would direct attention to the fact that musicians have it in their power to make the time-notation much more legible than it is at present without the introduction of a single new sign. The means are: (1) To adopt the bracket notation above suggested; (2) To note the various fractions of the beat into groups, each equivalent to a beat; (3) In cases of syncopation, to show the beat graphically by means of tied notes.

The following examples are taken from Lasey's '*Repression Musicale*,' though the idea is due to Cheré.



Gálcs's notation is also given, and is, I think, in the clearest of the three, but as it involves an alteration in the sense in which the dot is used, it will not be so acceptable to musicians. For the benefit of those who are interested in the matter, staves have been printed, which will presently be distributed, comprising Gálcs's Chromometer and the mode of applying it to the staff as well as the above suggested notation.

I must not forget to say that musical notation forms an important branch of the method. From the first lesson pupils are taught to recognise and write down simple phrases revealed by the teacher to the syllable *la*. If some gentlemen will be kind enough to write down a short air, I will try and show the practical process.

I have now reached the end of my necessarily rough and imperfect sketch of the elementary course of the Gálcs-Pavics-Cheré Method. With two lessons a week, and half an hour's daily practice, it takes a diligent student from nine months to a year to master it. At the conclusion he is not necessarily a finished vocalist, but he is, perforce, a skilful, rapid, and intelligent reader of music. Whatever branch of the art he may follow, the teacher under whom he may study will have a solid foundation to build upon.

I have endeavoured to show that, commencing with the simplest element of music, the major diatonic scale, a method of teaching is adopted in the first lesson which is consistently maintained until the last; and that by means of Madame Cheré's exercises as much can be learnt at home by private study as in the class. Nothing is taken for granted, nothing is left to

* By reading the lower staff here with a piece of paper, the effect of the same phrase written in 2 time is shown. Conversely, by writing the two groups in each measure by a still lower line, each measure becomes one line.

chooses, everything is systematised and simplified until the whole course has been brought within the capacity of a child of seven years of age; not exciting a more thorough knowledge of the staff than is afforded by any other method.

The author of '*Expression Musicale*,' says:—'There are many music instruction books possessing a certain artistic value, but, in my opinion, there is only one which merits, in the full meaning of the word, the name of method—and that one is Cherd's; for it alone gives exercises on intonation and time in so logical and admirable a progression, that the least favoured pupil gradually, and almost unconsciously, surmounts all difficulties of reading notes, and that without the help of any instrument.'

The Galignani-Cherd Method is now taught in France, in the principal Government schools, in the Polytechnic, and the Normal Schools. It is officially taught in the Army and Navy, and in many of the Colleges of Paris. In Geneva it is taught in the Conservatoire, and in the Cantonal schools, as well as in the Elementary schools. It has quite recently been introduced into Holland; duplicate plates of the English books having been supplied for use in connection with the Dutch language. Cherd's music in Galignani's notation is also being published in Holland, of which I produce a specimen.

It is also taught in England in several schools, including those of the Girls' Day School Company, by M. Andrieu, who first taught the method in London.

Among the eminent musicians who have assisted in promoting the success of the method may be mentioned Hottel, Leffebvre Wely, Felixien David, Offenbach, Gernert, Elwart, and Lussy.

I may mention in passing, that a complete English edition of the Cherd books is now in the press.

I produce for inspection the complete method in French: Cherd's Harmony, Madame Cherd's Piano Method—both of which are worthy of careful attention—Galignani's '*Nouvelle Méthode*,' Paris's 2,000 Aims, Cherd's 600 Dots, and various choruses in the figure notation produced in France and England.

I hope I have said enough to excite your curiosity and to induce you to look into the method theoretically and practically for yourselves; for I think you will not rise from the study, until, like Lussy, you are of opinion that the Galignani-Cherd method of teaching offers an unqualified Basis of Musical Education.

DISCUSSION.

The Chairman, in proposing a vote of thanks to Mr. Hallen, said he had not been able to do full justice to his theme by having to go through it so rapidly. He had, however, presented his case very clearly, and the one point which struck him was, that it imparted the power to a singer to form a notion of what a piece was before attempting to sing it. In the course of his professional life he was constantly meeting people who had no notion of what a piece would sound like until they played it, and he thought it was very desirable that they should be able to look at a piece of music and know what it was like without hearing it, and if this system would have that effect, he should be very glad to have it introduced into our elementary schools.

Mr. Curwen had listened to the paper with very much pleasure, and had followed the necessarily rather hasty explanation of the system as well as he was able. It seemed to resemble very much the Tonic Sol-fa system, with which his father's name was associated. But it was a very curious fact, which testified to the truth of the principle on which they were founded, that the authors of these two systems had worked quite in independence of each other. His father and Miss Oliver, from whom he had some assistance in working out the Sol-fa system, were quite ignorant of the work which was going on in France. The only respect in which they had profited directly by the labours of Cherd had been in the adoption, some years ago, of his *translatives*, which they found very valuable. He did not feel surprised, and perhaps it would be hardly expected he should, that this system was superior to the Tonic Sol-fa, and he might mention one or two points of difference. The first was the use of figures, which were called by the name of the Sol-fa system *syllables*, and he could not see why they should not put the syllables in the first instance, thus saving our mental process. He knew it was said that there was an advantage in the use of numbers to represent the scale, but he could not himself see that that helped the pupil. He could conceive of two ways in which numbers might be of use. The first was to express the ratio of vibrations—that is, you might call C 1, and the octave above 2, or the G 3, and so on. Or you might call the 5th of a chord 1, the seventh 2, and so on. In this way you might help the pupil, but he could not say that it helped him by using figures for the scale tones. He did not say that it hindered him, but he could not see that it gave him any assistance. They found it best to teach by the use of chords, not by the degrees of the scale. They took first the 5th and then the 3rd, and thus all their teaching was through consciousness and the ear was trained, because the succession of notes of the scale were naturally dissonant with one another. The first notation in this system was

very ingenious. The solfège had adopted a different one. They expressed silence by the absence of any sign, whilst here there was a thought. They simply said that whenever nothing was seen, nothing was sung, which was a very simple and obvious arrangement. It seemed to him in this arrangement the smaller divisions of time were more complex than they adopted. You might have four bars over a note according to the subdivision of each beat, whereas by using commas and full stops the time was expressed with fewer signs.

Mr. MacNisour hoped that Mr. Bullen, when he replied, would explain why, if he said that the figure 1 helped a pupil to keep in mind the key-note, because it showed the other notes of the scale were derived from it, how that would apply to the minor scale, where the key-note was on the 6th. The minor scale was written 6, 7, 1, 2, 3, 4, 5. If it was said that in the major mode the 1 helped the pupil to keep the key in mind, how did that act in the minor?

Mr. Crossman had listened to this paper with great pleasure, it being the first time he had heard anything like an elaboration of the method. It struck him there was a great advantage in using figures, because it seemed such a natural mode of thinking of a 3rd, a 4th, a 5th, a 7th, and so on, of the scale. You must do that whether you had syllables or not. He knew something of the use of figures, because many years ago, when he was a chorister boy, the late Professor Taylor and Mr. Turle, of Westminster Abbey, produced a book which was very useful in teaching the boys, and it was based on the system of figures. As this was so very successful in the simple way in which it was used, he had no doubts in the future it would bring forth admirable results, and he hoped it would do something more towards making us a musical nation. As to the indication of time at the signature, that was a matter about which he thought most musicians were agreed, and many were endeavouring to do away with the old signs, and using 2 or 3, and so on. As to the matter of writing synopsized notes, the method shown could scarcely be claimed as a special advantage of this system, because he believed Mr. Osburn and many other writers for the pianoforte, when they were writing for young ladies, did write separate notes with a tie over them. If, however, they were writing for practised players, there was no necessity for so doing.

Mr. Knapp said there was one little point in the history of the Geline-Paine-Cheré system which he should like to draw attention to. Geline, in 1818, was only acquainted with the mean tone temperament, and in his book he laid down and referred the principle that a true 3d should be flatter than would be expressed by the interval 3, the major 3rd being correct. When Knapp Cheré published his method he especially introduced an intonation which was quite extraordinary, and which Mr. Ellis thought could have never been any but a paper system. He divided the octave theoretically into twenty-five parts, of which he gave ten to a tone and two to a semitone; the consequence

being that if it had been played exactly as he wrote it, even the *Mib* would have been sharper than in just intonation, and the major *dié* would have been very much sharper than that on the present pianoforte. Mr. Ellis did not believe that such a scale had ever been really sung. Cheré proposed this in order to have the *Cg* sharper than the *Dy*, having the order thus—*C Dy Cg D*, whereas in Galin's system it was *C Cg Dy D*. Mr. Ellis thought it must have been some misapprehension on Cheré's part, because he distinctly stated that he was advocating the same view as Galin, but Galin gave the actual length of the strings, so that there is no doubt of the intonation he intended.* If you sang *Cg* sharper than *Dy* you were not singing according to the pianoforte, and in 1860 some of the principal musicians in France wrote a pamphlet against Cheré's system, singing out this amongst other points, of the *Cg* being persistently sharper than *Dy*, and saying that *Cg* and *Dy* were in fact but one note†. Last week a fact with regard to the temperament used in France came to his knowledge for the first time, which he might mention. He was in correspondence with the great organ builder, M. Cavallé-Goll, who informed him that up to 1834 his father tuned all his organs on the old method, with the celebrated "well." From 1834, when the present head of the firm undertook the business, he persistently tried to introduce the equal temperament; but he thought he could not have done it in all instances, because in 1851, at our great Exhibition, Mr. Hupine and M. Fils examined all the organs exhibited, and only found one tuned on the equal temperament, which was by Schellen. The equal temperament was introduced for pianofortes sometime before 1834, and Cheré's book was published in 1814, so that they could understand how Galin, who published in 1819, adopted the old system, but not why Cheré should have avoided the equal temperament. Mr. Ellis would not have raised any objection to Cheré's using, like Galin, the prevalent temperament of his time. But he said one founded on the Greek intonation, which made the *Cg* much sharper than *Dy*, is but $\frac{1}{3}$ of a comma sharper. The effect of that in reality was not displeasing, but in harmony the chords would be excessively rough. Now as Cheré's system had obtained a great number of prizes for its singing, he did not think it possible that the teachers could have carried it out practically, although they had it down theoretically. In a book published by Madame Cheré, called the "*Science and Art of Intonation*," she asked (p. 34) why certain persons had a false voice, by which she meant, sang out of tune, and described a means for

* Galin, *Exposition des Méthodes Militées pour l'enseignement de la Musique*, 1819, p. 142, note. These members state that he actually used Huyghens's scale of 31 parts to the octave, the tone having 4 and the semitone 3 to 2, 3 of these parts; see also p. 187, note. Cheré, *Méthode*, p. 129, explains that Galin gave two divisions to the interval, 3 to 2 and 4 to 3.

† This passage is quoted in the preface to my translation of Helmholtz, — A. 2 E.

rendering their voices just. She said they sang out of tune from not understanding what the minor second was, as she called it, that is the interval E to F, and she said that in singing an ascending scale they sang the 1st, 2nd, and 3rd correctly, and the 4th too flat. Whilst in descending from the 3rd they sang the 3rd and 4th right, and sang the 3rd of the scale too sharp. These were the exact faults which would arise by making the semitones 'mi-fa' too close together. If you took 'mi' correctly in ascending, you would take the 'fa' too flat, and she gave an elaborate series of exercises to overcome that defect.

The Chairman said it would be the same with the 'ai' and 'do'.

Mr. Evans said that Cherré described the melody 'do-re-do' as being precisely the same as 'fa-mi-fa.'* Therefore, he thought in chorus singing, where the effect would be loud very much, they must make a certain allowance, and sing in a temperamental which was not uniform, but modified just in the same way as he understood violin players lowered the notes in their double-stopped passages, in order to make the chords bearable, because of course upon a violin, if they were to play them exactly, the sharp 3rds of the Greek intonation, at which violonists generally profess to aim, would be perfectly frightful. The Chairman they knew had remarkable powers of distinguishing intonation, and he should like to know if he could say, having heard some of these chromatic passages sung, whether they were sung on the Greek scale with closer semitones than upon the pianoforte.

The Chairman said he would not venture to give an opinion, because the pitch was so different from what it ought to be, that he could not say. And it was very difficult to distinguish slight variations in tones and semitones when sung one after the other, and unless you heard them in combination with their roots you could hardly distinguish what they were. The difficulty presented to him all through was this, that having the faculty of absolute pitch he found the key selected was not that represented, and therefore he could not answer the question, but he should say that if anything the semitones were rather smaller.

Mr. Evans said those habits would in chorus singing produce a very perceptible roughness, and probably the intonation was modified accordingly. They laid down the tones do-re-do, mi-re, as the basis of everything, and therefore probably they would be taught to sing that correctly, but they were taught it entirely by pattern, and he understood that in Cherré's system everything depended on learning two tones, namely, the ascending do, re, mi, fa, sol, and descending do, si, la, mi†. Now you could teach anybody a melody in that way. He had a friend, now in Egypt, who was trying to learn, if she possibly could, a tone as sung by the Arabs, but she found an immense difficulty,

* *Mus. Cherré* (1864, p. 32) deals with the notes arising from this case also—A. J. E.

† *Cherré, Methods*, p. 216—A. J. E.

and there was a musician who had been there for years who was in the same quandary. It was impossible to get the intonation; but the Arabs were taught the intonation from childhood, and they did it as naturally as they spoke Arabic. Thus by patterns you might teach pupils to sing according to any temperament, and it was only by chordal compositions that you were able to make them sing in tune by producing chords without basis. That was what the Tonic Sol-fa system was based on from the first: it taught chords, and while in the second lesson, after only learning *do, re, sol*, pupils sang in parts, so that there was a mechanical means of correcting the ear. He did not see that there was that means by the Cheré system, under which the pupils were taught to sing the different notes, one by one, by the means of those *points d'opposer*. He did not see what remedy there was that they would sing anything which would bear being listened to in chorus.

The Chairman said that having the faculty of judging of absolute pitch, if he had to begin his studies in this way, he feared he should find a difficulty in calling a note 'sol' which was not 'sol,' and the same with all the others. They called every note in the scale 'do,' and that would really be a great difficulty to him.

Mr. Bousquet said he learned the elements of music rather later in life than usual, and had a distinct recollection of all the steps in the process. He used to entertain the excellent and able musician who was kind enough to instruct him, by insisting, in speaking of the scales and the elements of the harmony, upon calling the notes by their numbers in precisely the same way as had been shown. It was the only way in which he could make it intelligible to himself.

Mr. BULLAN in reply said Mr. Bousquet had shown the value of a figure notation. He should say that the boy (twelve years old) who had been singing these exercises was almost entirely self-taught, nearly all he knew being learned by private study. The system of figure notation he considered of great importance, because it showed correctly where the beat and accent came. Exceptions had been taken to the notes to represent silence, but he thought positive silence was always preferable to negative. If a singer saw a number of notes, either single or combined in groups, he knew exactly how long to rest; whereas if there were simply a space, as in the Solfé method, he would be in doubt. He would now proceed to show them the enharmonic scale on this system, in which the flat was below the sharp, this being the direct consequence of making the minor second less than a semitone. He doubted whether any of those present had ever heard the enharmonic scale sung, although it had often been played on instruments, but they would make an attempt at it.

$1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9 \quad 10 \quad 11 \quad 12$

This was done very successfully, and Mr. Bullan explained how the intervals from *B♭* to *B♮* were taken from the points

d'appui; it could never be done by trying to move the voice up so small an interval. The reason for adopting 'la' minor as the typical minor, was one of convenience, there being only one accidental 'sol ♯' and when modulation took place to the relative major there was none. If 'do' were taken as the minor tonic, there would always be two flats (B ♯), sometimes three (B ♯ C ♯). He was surprised that a Tonic Sol-faist should have made that objection, because it applied with greater force to their system, as they sharpened the 6th as well as the 7th. With regard to the figure notation, the figure was associated indubitably with the syllable, and there was no more difficulty in naming *b* sol or *f* fa, than in naming *g* sol instead of *a*, or *ta* fa instead of *ing*. The chief objection to the method, however, seemed to be that they did not teach just intonation. He was quite unable to enter into a mathematical discussion of the subject, and would take the figures quoted as being for all practical purposes correct: but would remark that just intonation never existed in fact. The only system which professed to teach it was the Tonic Sol-fa, and it was easy to see by reference to their notation how far they maintained it. The following phrases from the Standard Course was shown on a diagram:—

Key of	sol-fa	Scale.
C	$\text{a} | \dots \text{a}$	$\text{a} | \text{b} | \text{c} | \text{d} | \text{e} | \text{f} | \text{g} | \text{a} | \dots$

In the second measure *d* becomes *f*, and in third, *f* becomes *a*: but by reference to the modulation, it would be found that *d* in the key of C was, in just intonation, a comma higher than *f* in the key of B ♯, and *f* in the key of B ♯ was a comma lower than *a* in the key of D: thus neglect of the comma was constantly occurring. He would also remark that it was the practice of the most successful Tonic Sol-fa teachers to teach the upper half of the minor scale as *b a g f* from the pattern *a b c d*, although in just intonation they were quite different. Thus, while professing just intonation in theory, they continually sacrificed it to convenience. The theory was admirable, but in modulation they adopted the same system as Gildais, viz. the Pythagorean system of perfect fifths. He considered that the method which he had been describing was that followed by the best vocalists and violinists, and it had been found by experience that in the best choirs the sharps were sung higher than the flats, notwith- standing Professor Macpherson's remarks in his lectures on Harmony, and the experience of Mr E. J. Hopkins, the organist of the Temple. The advantage claimed for this method was very great facility in singing chromatic passages, and as difficult chromatic music was cultivated with success, the laws suggested by Mr Ellis were groundless. It had been objected that they did not teach by chords, but this was quite a mistake, because chords, and especially the tonic chord, formed the very basis of their teaching, as was shown by the diagram.

ON A SUGGESTED IMPROVEMENT IN STAFF NOTATION.

By ALBERT HALL, Esq., B.E., M.R.I.A.*

As there is anything in this world so perfect as to be beyond improvement, our established notation can scarcely lay claim to such an exalted position, to judge by the many attempts that have been made from time to time to improve or supersede it.

I may mention at the outset that this communication owes its origin to a paper entitled 'A suggested Simplification of the established Irish Notation,' read by Mr Sedley Taylor, in December 1874. Being engaged on another visiting some school children in connection with one of our church schools, and experiencing the many difficulties of notation—both the Staff system and the Tenor Sol-fa—I was very glad to find such a practical question dealt with by the Musical Association, not only in the paper of Mr S Taylor's, but also in another read by Dr. Stainer, a short time afterwards, 'On the principles of Musical Notation,' which was discussed at length by Mr. Hallé, Professor Monk, and other members of the Association.

I now propose to take up the subject where it was left at the end of the autumn of 1875, giving a brief summary of the opinions expressed in the two papers to which I have referred, and then proceeding to explain a method of my own for effecting the same improvement in our Staff notation that Mr S. Taylor ably showed the need of in the paper to which I have referred. I feel that before doing so it will greatly relieve the minds of some of the older musicians if I state that I am not going to torment old or young by the introduction of a single new sign, unless certain marks in the bar divisions might be so called, nor to change the meaning of any old ones; in fact, the music printed in its new dress can scarcely be distinguished from the old form at a superficial glance.

Before proceeding, I must assume that every one agrees to the need for bringing the key-signs and the relationship of all intervals thereto in a more distinct way before the reader, thus

* In the absence of A. Hall, Esq., this communication was read by the Hon. Secretary.

our present Staff notation succeeds in doing. There can be no need delaying to repeat all that has been said before on this point.

Out of the host of systems of notation that have been proposed from time to time, there are but two that have obtained the sanction of common use, namely, the Staff notation and the Tonic Sol-fa system, each possessing some advantages and disadvantages which can be best compared under the following headings:—

ABSOLUTE PITCH.

It is most desirable, if not actually essential, that absolute pitch should be indicated to a singer. In the Staff notation every note has an assigned position and corresponding tone, so that the Staff notation succeeds in representing absolute pitch perfectly. The Tonic Sol-fa, on the contrary, does not attempt to do this, except by a memorandum at the beginning of each piece, that the key is so and so; hence the advantage of being able to observe the general line of the music, with regard to the singer's voice, is almost lost.

RELATIVE PITCH.

The Staff notation, however, represents relative pitch most imperfectly, for the key-note is in no way directly brought under the notice of the reader. He is obliged by a process of reasoning to deduce the fact that so many sharps or flats in the signature means such a key; then to find the key-note amongst its eleven competitors, and not lose sight of it again. And further, it must be remembered, that key signatures convey no meaning except to the player of an instrument with a key-board, like the piano or organ. A vocalist knows nothing of sharps or flats in that sense, nor does he want to. The Tonic Sol-fa, on the contrary, is perfectly successful in representing relative pitch. A singer using this system cannot move from one interval to another without feeling intuitively his position in the scale, and it is, I believe, a fact that thousands learn this system readily and sing at sight with more success than would be possible with the same amount of training expended on the old notation.

TIME, MEASURE, AND GENERAL CHARACTER.

Under this heading the Staff system must claim all the advantages. In the first place, time is represented with more distinctness and can be carried into more minute subdivisions than is possible by the Tonic Sol-fa method. Secondly, a round spot can be more easily read, as a general rule, than a letter, and when the Tonic Sol-fa is accompanied by words for singing—a list also built up of letters—the comparison between the two does not tend to clearness, but the reverse. Thirdly, the Tonic Sol-fa method of carrying intervals above or below an octant by

small super-scripts or sub-scripts is liable to error in reading, an error which often becomes cumulative. Fourthly, the pictorial character of the Staff system is to some extent an aid to the reader.

The conclusion from all this appears to be that if the Staff notation could have the key-note of the composition clearly indicated so that the relationship of the various intervals of the scale to one another, as well as to the base, may be as evident as it is in the Tonic Sol-fa system, the Staff notation would then become infinitely superior to all competitors.

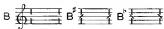
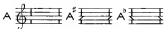
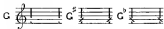
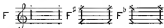
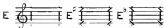
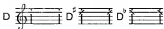
Mr. Sedley Taylor proposes to effect this improvement by a very simple and ingenious device, namely, a wavy line along the line or space that represents the key-note of the piece, the shape or mode of curvature of the wave differing for flat, sharp, or natural keys. The success of this device cannot be called in question so far as the indication of the key-note is concerned. The only defect that can be urged against the method is, that a slight confusion occurs when notes lie on or immediately next the key-note, especially with notes and accidentals, as well as with all dotted notes. And further, it becomes particularly troublesome to execute in MS.

The way in which I propose to indicate the key-note is by a simple gap in the bar divisions, so that the line or space on which the key-note lies may appear to run along the staff uncut by bar divisions. Although this method of indication is slight, yet when continued bar after bar it becomes quite sufficiently conspicuous for the purpose. In order to distinguish between the natural and other keys, I would leave the gaps entirely open for the former, and crossed by a short line for the others, sloping upwards to indicate sharp keys and downwards for the ones. (See Plate I.)

In our present Staff notation the lines and spaces are called down to the white notes of the key-board, but in the improved system the nomenclature is made that lines and spaces represent the actual notes of the unique diatonic scale, be they black or white, so that meaning from any tonic, the intervals are always similar, hence the employment of sharps or flats is permanently after certain notes of the scale when music is written out of the scale of C—what we call key signatures, become no longer necessary, and with them will disappear the use of the symbol natural (\natural) to mean sometimes (\sharp) sharps, or sometimes (\flat) flats, according to the key, as all accidentals, modulations above or below the true notes of the scale, should be marked by a $\$$ or a $\%$: i.e. flat, in all keys accidentals would be written as if the composition were in the key of C.

Modulation from key to key can be carried out with great ease, and should be indicated by pressing the outgoing and incoming bar divisions close together (see Plate II.), which may be done not only at the beginning of a bar, but at any interval.

EXAMPLES of KEY SIGNATURE



EXAMPLES of TRANSITIONS FROM THE KEY of C

TO D	E	F	G	A	B
D [♯]	E [♯]	F [♯]	G [♯]	A [♯]	B [♯]
D ^b	E ^b	F ^b	G ^b	A ^b	B ^b

METHOD of WRITING INTERVALS ACROSS THE BRIDGE · THE ACCIDENTALS SHOW WHAT THE INTERVALS WOULD HAVE BEEN HAD THE OCT. STRING KEY CONTINUED

mediate point, by employing a thicker or thinner style of type for the purpose; and in order to render reading as easy as possible, to reduce the danger of all efforts of mental calculation, when the ascending interval is not a natural note of the existing key, I would have an accidental placed immediately in front of the double-bar division or bridge, so that the singer may be able to take the interval at once, without having to calculate how many accidentals the new key differs from the old one, and how this would affect the step that he is about to make. (The example in Plate II. shows this carried out for every note of the chromatic scale in a transition from the key of C to E \flat).

FRAGMENT OF REDUCED VOICE SCHUBERT'S MASS IN E \flat .

KEY A \flat . *Andante. Solo.*

TENOR. *Solo.*
 He - re - de - tus qui

ALTO. *Solo.*
 He - re - de - tus qui

TENOR. (P. voice). *Solo.*
 He - re - de - tus qui

BASS. *Solo.*
 re - cit la re - cit - re De - mi - ni, be - - - - - re -

re - cit la re - cit - re De - mi - ni, be - - - - - re -

The image displays two systems of musical notation, each consisting of four staves (treble and bass clefs). The first system shows a melody in the Dorian mode (D-F-A-B-C-D-E-F) with accidentals (sharps and naturals) used to indicate the lowered second and seventh degrees. The second system shows the same melody but without accidentals, relying on the context of the mode to define the pitch. The lyrics 'the - two qui - re - us in no - na - me De - us' are written below the first system, and 'the - two qui - re - us in no - na - me De - us' are written below the second system.

There are two ways in which the minor mode may be written in the notation. Either the actual key-note can be indicated, the thirds, sixths, and sevenths being accidentally flattened where they occur; or the present method of writing in the relative major can still be carried out, accidentals of course being used in the ordinary way.

Now the proposed method of pointing which I have described adds to the staff notation all the advantages that the Tonic Solfa can afford as to facility in recognising relative pitch, and this

is obtained without making any material change in the present system, or giving musicians anything new to learn. It offers no difficulty in printing our expenses in providing a stock of special type, as a dozen bar directions, in fact, are all that is needed to print in every possible key, and lastly, it is very easy to write in MS.

DISCUSSION.

The Chairman proposed a vote of thanks to Mr. Hill for his paper, which was seconded by Mr. G. A. Osborne, and carried unanimously.

The Chairman said, taking the *Beethoven* from Schubert's *Mass* in *B \flat* in accordance with the description in the paper, the key of *A \flat* was indicated at the signature by a grave accent in the space denoting *A*. In the second bar there was a \sharp put before an *E*, which indicated that that *E* being flat already, it was sharpened to make it natural. This was rather reverting to the old practice, because at the time of Correlli, if there happened to be a flat at the signature and a natural was desired, a sharp was made use of to indicate the change. The argument was very simple: the note being already flat, you must sharpen it to make it natural. He could not say at the first glance that this seemed more likely to be easily read, but one could not judge hastily. The system might present advantages, and he hoped they would be calmly and carefully considered.

Mr. W. H. Courtney said one thing struck him as a practical inconvenience, from the introduction of a sharp instead of a natural. As matters at present stood, if you saw *B \sharp* you knew it meant a white note on a piano-key, in fact, *F* natural, whereas in this case it did not mean anything of the kind. It only raised the note one semitone, but at the same time you had to imagine *E* natural and read *B \sharp* , which he thought would be a great difficulty. As to the matter of the bar line through the staff, that at present seemed pretty, and it was convenient at the beginning of each bar to see that line indicated a flat or sharp according to the direction which it took; but there was that disadvantage, that *F* seemed incomplete, because it did not tell you the actual note of the note. For instance, in the key of *A* you had a sharpening line to indicate *G \sharp* , but nothing to indicate *G \flat* or *F \sharp* . If you depicted the one, you ought to represent the whole.

Mr. Keane said the signature only represented the key in which the piece was written. If it were in the key of *A \flat* , you indicated that *A* was flat.

Mr. Courtney said, if you remembered three flats out of four, he could not see any difficulty in remembering the fourth. If there were any advantages in the thing at all, you might get over

the difficulty by saying it is *AD*, and leave out the four flats at the commencement.

Mr. BONAQUAT thought what it was intended to meet was the difficulty many persons experienced in remembering what the actual key was.

Mr. HILL remarked that by this system you saw at every bar what the key was.

The CHAIRMAN said that there was a practical difficulty, namely, that the whole bar was not always in one key. In the third series of lines in the *Benedictus* there was a modulation in the middle of the bar. At the very outset of the bar the key was indicated to be *AD*, but when you got to the second bracket it was *ED*, and therefore the system did not carry out its objects.

Mr. HICKMAN said to see the necessity for the line being broken to show the key. The same thing might be done as in the *Tome Sol-fa* method, by putting the name of the key over each passage, which would thus save all trouble of thinking what the key was, and remembering which note was sharp and which flat, and so on.

The CHAIRMAN said there was a double mental reference in the case of all accidents; but he thought it was hardly fair to discuss the system in the absence of Mr. Hill.

Mr. BONAQUAT said some of the remarks had reference to keyed instruments, but Mr. Hill, in the paper, was clearly thinking of the singer entirely, and he would have him treat the portion of the scale which went from the key-note just as if it were in the key of *C*.

Mr. CHURCHMAN would say in reply that now-a-days every singer could play the piano-forte, and the majority of singers had to play from a vocal score of four parts.

The CHAIRMAN, referring to the staff bar in the *Benedictus*, said that it was marked in the key of *AD*, but it really was in *ED* music.

Mr. CHURCHMAN thought they were doing Mr. Hill an injustice in discussing the paper in his absence, but he hoped it would be understood that there was nothing condemnatory of his system intended; they only regretted his inability to be present and support his own views.

The HONORARY SECRETARY communicated the thanks of the Musical Association to Mr. Hill for his paper, and, when forwarding notes of the discussion, invited him to make such further remarks by way of reply as he might deem proper.

11 QUEEN'S SQUARE, GOWER.

Aug 13, 1874.

DEAR SIR,—In reply to your letter asking me if I have any remarks to make on the discussion of my paper the other day, which you were good enough to read, I beg to say—

1st That I had vocal music chiefly if not entirely in view

when considering this notation. There is no reason why it should not be employed for keyed instruments as well, for a player would soon become accustomed to read a \sharp or \flat where a \natural is now used; and with this advantage—that from having accidentals always the same in every key, transposing would become very easy. Yet I believe the ‘improved’ notation would be most useful in those fields the Tonic Sol-fa at present occupies. I may add that the system renders the tenor or other unfamiliar clefs as easy to read as the more general treble or bass.

2ndly. The special advantage of such a notation as this is, that a singer may be enabled by one and the same operation to read the note and ascertain its relation to the tonic as well (as in the Tonic Sol-fa). By indicating the key-note at every bar division, this relation is brought so close to the eye that it can scarcely be missed (in other words, the substitution of ‘observation’ for ‘memory’). So that the chance of an error, regarding the key and mistaking a major for a minor interval, or the reverse, is reduced to a minimum.

3rdly. As to modulation. In the Staff system, even when the key is changed for many bars, the signature is seldom altered, the change being effected by the use of accidentals, which is all very well for the instrumentalist, but not at all so easy for a singer to follow. Of course, if a change of key were to follow every passing modulation, the work would be worse than the disease; but the Tonic Sol-faists have already practically dealt with this question, and it is one that must be settled for each individual piece of music, and about which musicians have different ideas, some wishing more frequent and others fewer changes.

4thly. Modulation can be effected at any point, not of necessity coincident with the beginning of a bar, by employing a thicker or thinner style of type, as already mentioned.

In conclusion, I would suggest that this subject of notation is one worthy of the labours of a special committee, who might give it consideration, and report to the Musical Association some time next session.

Believe me, very truly yours,

ARTHUR HALL.

LESLIE HALL, Esq.,

21a, St. J. St., New York

MAY 3, 1878.

W. CHAPPELL, Esq., Vice-President, is the Chair.

ON A PRACTICAL METHOD FOR READING HARMONY.

By ALFRED REEDER, Esq.

I must be excusable first of all, to explain a little more fully the title announced in the *Byllikins* for this evening's paper, viz. "A Practical Method for Reading Harmony." The title originally sent was, "A Practical Method for Reading Harmony, adapted to performance on the organ or pianoforte, and distinct from the composer's manner of analysis." I was kindly recommended to leave something to be explained, rather than adopt a title too long to be well remembered.

I do not attempt to set aside any existing method of harmony, being fully persuaded that a composer must study his mode of writing by reference to key and its relationship, and his musical form, must be based upon that knowledge. But I believe if my method for the apprehension of chords was taught before the student began the study of harmony according to the composer's method, great advantage would be gained, inasmuch as it forms a stepping-stone from mere note-knowledge to that higher branch of technical learning.

Let it therefore be distinctly understood that my purpose is to introduce a method of harmony analysis for those who wish to perform intelligently the harmonies written in the old notation, and thereby to make plain and easy of comprehension many difficulties of reading which the composer's manner of writing according to key involves.

The difference between the methods consists chiefly in the medium for thought. The composer studies and thinks according to the key in which his compositions are set, and by which he names the roots of his chords, whether dominant, supertonic, or tonic, &c.

The medium I use for the player's analysis is the key-board itself, for the simple reason, that the 12 diatonic comprise the roots of every chord employed in the whole range of musical

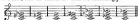
productions. The book is analysed through the key-board, not the key-board through the book; which, if I am not mistaken, is the case with all other methods.

There are reasons why it is practically impossible to analyse every passage quickly by the composer's method. For instance, it is apparent that if chords are named according to the formal names of the key to which they belong, as dominant, tonic, &c., my indication as to key renders it equally uncertain as to the name of the chord. An important step, therefore, is easily gained, if quickness can be combined with certainty, and any apprehension can take the place of much mental effort. To secure these advantages, which I deem of paramount importance for a player's analysis, a method upon a different basis is necessary, and it is now my pleasure to show an attempt to form some such method upon the fixed basis of the key-board.

When the mind is by a multitude of things thrown into confusion, it must call to its aid the faculties of reason and order, to save perplexity. For instance (to use a homely illustration), in a cloak-room the person in charge has to take care of various and numerous articles belonging to a multitude. Here is a case where it is altogether beyond the power of mind to remember the particular articles and the particular individuals to whom they belong, without the aid of reason and order. Reason suggests putting together in one bundle the various articles belonging to one person, and the faculty of order suggests arrangement by letter or number.

Now this is precisely a case in point. Every chord in music is built up from some particular note called a root or generator, and this root is not merely the generator of one chord but several, such as, for example, the *fourtriads*—disminished,* major, minor, and augmented, if a sixth a minor seventh from the root of the first three, they supply three more. These seven chords may be considered as so many articles which each individual note, as a root, places at the disposal and service of the player. Having twelve such notes on the key-board, they are ready for us labelled by letters.

We will look for example at the seven chords just mentioned as belonging to the root C, and lay down the rule that, when chords appear to the eye built up by odd numbers, the root is the lowest note, and the chords are labelled accordingly.



The root may easily be seen in the inversions of these chords, by the following rule, viz.: when intervals of even numbers occur anywhere in the chord, the highest note of such interval

* The diminished triad is the chord of the minor seventh, I know well, has its root a major third below its base note; but it is very often used, and inverted, independent of this, just as the major or minor triads are, and therefore in this method I class it with them.

may be claimed as the root. The two even intervals which almost everywhere decide the root in the inversions of a chord are the fourth and the second.



A glance at the inversions of the above chords will show that in every instance the inversions of the triads give the interval of the fourth, and those of the seventh the interval of the second.

By the above rules a player may be at no loss to find that C is the root of each chord. Of course, to discern these several chords when their parts are distributed to wider positions, requires more education both to the eye and hand.

We will now turn our attention to what Dr. Stainer calls 'in his *Theory of Harmony*' (p. 48), 'the most important chord in modern music.' I mean the major triad and its inversions, which inversions are commonly spoken of as diminished seventh.

According to the method of harmony adopted by Dr. Day and Professor Macfarren, this chord is shown to arise from three roots only in a key, viz., the Dominant, Supertonic, and Tonic.



Dom. Sup. Tonic.

Now, whilst in my method I should ticket these chords, if found in their complete form, according to the letter of their roots, irrespective of key, yet I find the field of their inversions so huge, and their variations of form by the different distributions of accidentals so numerous, that it was not until after months of investigation on the key basis system, that a simple method of treatment sufficient for the purpose of recognising again the same combination of digits suggested itself.

The root being omitted in the inversions of the minor sixth, there remain four notes at intervals of minor thirds and an augmented second; and I am prepared to show that the accidentals used to express this combination of intervals are distributed in no less than 45 ways, yet all may be classified under three heads, and ticketed by three numbers, which the eye may see, and the mind recognise at once. Just as precious articles are placed with more than ordinary care apart from the common things in a cloak room, so I take these distinguished seventh and separate them from common chords, ticketed from their roots by letters, and assigns them a place henceforth to be recognised by numbers.

As we examine the key-board, we find one black digital and three white composing the first of the three distinguished seventh—



As only one black digital is here played, I fasten in imagination a ticket to it, with the Roman numeral I or number one.

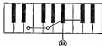
The next in order has EP in it. I fix my ticket to this digital, it being the second of the group of the two blacks on the key-board. The Roman numeral II, presents a capital representation of the two black keys, for the recognition of this chord when analyzing.



The next in order has D# in it, and is, like the last, composed of two black and two white keys. I fix my ticket to the D#, it being the third of the group of three black digitals on the key-board, which are again



represented by the Roman numeral III.



Other reasons there are why we may number them thus. If considered as belonging to C, the dominant No. I is of most frequent use, and therefore of first importance. No. II, with euphonic root is of more frequent use than tonic, and of second importance. No. III of third importance. Again, if we add or deduce one of the notes, No. I, has one black key, No. II, has two black keys, No. III, has three black keys.



This will only answer, however, all through the inventions with No. I and the others merely as this starting point. There is therefore no practical value in these reasons, they only seem to confirm this order of number.

No other chord but this of the diminished seventh, when inverted, consists of the same intervals, and whenever found must be either a No. I, II, or III.



Taking the chromatic scale, writes for each key according to scientific principles to which Professor Mocherius, and even Mr. Stephens in his elements of a new system, agree—in making the second and third and sixth and seventh degrees of the major diatonic scale flat, and the fourth augmented—taking, I say, this arrangement as the basis for writing chromatic scales, we have an alphabet by which to spell chromatic chords. By the diagrams we shall find that the diminished seventh cannot be written, however its accidentals may be distributed, without our being able to assign it a place under one or other of the three numbers alluded to.

No. I, with its single black digital would be essentially and properly written in the seven flat and seven sharp keys thus—

as before.



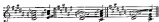
Including key C, here are fifteen modes of spelling this one set of four digits—

No. II.

Is written also in fifteen ways, and although composed of the same intervals as No. I, yet no two will be found alike.



* For explanation of the two-digits, see pp. 163-164.



No. III.

Also is written in fifteen variations of form, and also diverse from the other thirty.



Making forty-five various readings by which the fingers are guided to only three sets of digits, each set composed of the same intervals; and it is quite possible, without going beyond the common convenience of double-sharps or double flats, if we extended the keys to twelve flats and twelve sharps, to write each set in twenty-five ways, making a total of seventy-five forms of spelling; yet, the whole of that diversity to the eye may be synoptically placed under the three numbers as above.

If we look for a moment at the resolutions of the above, we shall find how the venerable key systems of analysis are fore-shadowed, and a former remark verified, viz. that my method would form a stepping-stone to that higher branch of technical learning.

I shall classify the various resolutions under numbers according to the more or less frequent use made of them; thus, however, will only allow of a brief notice of the chief resolutions.

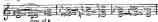
The first resolution is that from the dominant to the tonic, and may be known by any one note of the four rising a semitone to the root of a common chord.



The second resolution is that from the supertonic chord to the tonic, and may be known by any note remaining as the root of a common major or minor chord.



The third resolution is that from the tonic to the dominant, and may be known by any note remaining as the root of a dominant chord, the seventh being played together with the root to distinguish it from a tonic chord.



A fourth resolution is that of passing from one number to another.

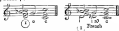


These are the four chief resolutions.

Under the first and second there are intermediate ones, between the chord itself and the final tonic chord.

The first intermediate which attends on the chief resolution is when one of the four notes comprising the chord falls a semitone to what is really the root of the chord.

The second intermediate is an augmented sixth, either Italian, French, or German.



Chief resolution Number ten—

The first intermediate (as above), one of the four notes falls a semitone to the root—



and the second intermediate, one of the four notes falls to the 7th—



which produces a change of the whole chord.

I show these intermediates under one and the same number with their chiefs (first and second resolutions), using the term intermediates for more precise analysis.

All this, however, is burdening almost too strongly upon key systems of analysis, and may be thought to break up the simplicity of my design; for it is obvious, all may be read without such mental efforts, as a glance at each chord read by its root shows.

A few illustrations, taken from works known to all, will suffice to show the method as far as explanations have gone.

INTRODUCTION TO TRALLER'S 'HORN, SWISS HORN'

The entire introduction is an exposition of a subject taken from the second strain of the tune, and shows the three forms of the diminished seventh, and also shows of the chief resolutions.

It will be found an interesting occupation to trace these chords through the introduction to Beethoven's "Sonata Pathétique."

The fourth resolution may be illustrated from Sir Giovanni Battista's "Barnabe" in his 6th Concerto—

The musical score is for a piano accompaniment, likely for the 6th Concerto by Sir Giovanni Battista. It is written in G major (one sharp) and 2/4 time. The score consists of three systems of music, each with a treble and bass staff joined by a brace. The first system begins with a treble staff containing a series of eighth and sixteenth notes, and a bass staff with a similar melodic line. A 'Pedal note.' is indicated in the bass staff. The second system continues the melodic development. The third system shows the final resolution of the chords. Circled numbers 1 through 14 are placed throughout the score to mark specific chords and notes, likely corresponding to the 'chief resolutions' mentioned in the text. The title '1st Resolution' is written at the bottom right of the page.

Have the organists give a progression of numbers II, I, III, II, I, each resolving into the other.

It is worthy of remark that Handel seems to fix upon such chords as indicative of mystery and darkness. They will be found in the chorus describing a "thick darkness over all the land," in his oratorio *Israel in Egypt*.

over all the land,

a thick dark - ness . . . over all the land,
let there be darkness.

fin

We find it repeated in his *Messiah*. The music to the words "For behold darkness shall cover the earth," only hints at what is coming, and the chord is reserved to express "gloom disclose the people."

dark - ness shall - cover the earth

and grew dark - ness the

12

(10)

po - ple,

the

let darkness, be seen

(11)

But when Handel represents "the people that walked in darkness," Mozart's added instrumental parts show this composition to be covered by these chords, as best suited above all others to intimate bewilderment, groping in darkness, wanderings and yearnings after light.

that walked in dark-ness, that walk - ed in dark -

1 2 3 4 5 (1) 6 (11) 7 (12) 8 9 (13) 10

12 11 12 12 12



If these chords, therefore, be symbolical of the darkness of night, the intermediate resolutions to the less dark and mysterious chords of the seventh may be thought of as symbolical of the twilight of the morning; and again, the resolutions of these sevenths, especially to the bright major common chords, as the opening into day; whilst the immediate resolution from the dark seventh of the minor sixth to the bright major chord may be likened to the sudden breaking in of light after the darkness of a tropical night.

Although my short half-hour allowed for this paper is well nigh passed, I cannot but convey to you, in as concise a manner as possible, what I propose to do when more than one root appears in a chord.

A few self-evident truths respecting such combinations will, I hope, show clearly the ruling principle by which such a difficulty is overcome. The combinations of double roots appear where there are passing notes, suspensions, suspension of complete chords, appoggiaturas, and pedal notes.

PASSING NOTES.



EXAMPLES OF SUSPENSION IN SEVERAL FORMS.



(Explanation of Analysis, see p. 111.)

A musical score for the song 'The Rose Tree'. It features a treble and bass staff. The treble staff contains the melody, which is a simple, folk-like tune. The bass staff provides a harmonic accompaniment, primarily using chords. The key signature has one flat (B-flat), and the time signature is 4/4. The melody consists of a series of eighth and quarter notes, with some rests. The accompaniment uses a variety of chords, including triads and dyads, to support the melody. The overall style is that of a traditional folk song.

8-10-2008

Handwritten musical score for 'The Rose Tree'. The score is written on two systems of grand staves (treble and bass clef). The first system includes the lyrics 'O B B B' below the notes. The second system includes the lyrics 'B A B A B B B' below the notes. The music is in a simple, folk-like style with a key signature of one flat (B-flat) and a common time signature (C).

Measurement of Cervical Cancer

The first system of the musical score for 'The Rose Tree' consists of two staves. The upper staff is in treble clef and contains a melody of eighth and sixteenth notes. The lower staff is in bass clef and contains a simple harmonic accompaniment. Below the staves, the notes F, C, F, D, G, G, E are written, corresponding to the notes in the lower staff.

Appoggiaturas, or leaning notes, are the tone or tones, usually only unprepared, they richly show themselves instantaneously

with the note of a chord, except those upon which they lean. They are often written in small characters, but now-a-days are often incorporated with the lower notes.



The sustaining of tonic or dominant pedal notes, through several chords, make double notes appear in each chord of which the pedals are not a part. Thus the succession of harmonies are read independently of the continued notes.



Eight-armed brother receiving three arms

let. If such notes appear as a common chord or its inverse, since which speak of another root, they belong to another chord, and are borrowed.

Finally, these intrusions cause discomfort, and before peace and concord is again restored they must move elsewhere.

Irrelly. Whoever makes an error is removed, it, or they, have lost the intruder, and therefore none of them may claim the dignity of being named notes.

441p. The note to which they all bow submission, and to which, whilst intruders, they are Discount, is the note of the chief into which they resolve.

likely. The note to which they submit is the ruler and commander of the situation, directing and controlling their movements; it is therefore best for to assist him in keeping over the whole procession.

544. From all this I gather the rule, which is simple and complete, viz., when two or more roots appear in the above class of diacreds, attention must be fixed upon the resolution chord, and call the whole procession by the name of its root.

We may often take advantage of this rule, even when two roots do not appear in any combination. One illustration may suffice, taken from Mr. Henry Bauer's *Six Organ Places*, No. 1, p. 6. It reads:—



Observe the last two examples of the major seventh resolving into our No. II. and III. diminished seventh.

Before leaving this class of discords, allow me to read from my notebook a word or two about the character of these intruders.

Passing notes partake of the character of young life, full of play and activity; they run in and out about the notes of a chord, as though responding to an invitation given in the title of an old song, 'Ring me quick and go.' (Now, if any person takes exception to this illustration as being unworthy to the dignity of the present assembly, I beg of such to think of this little jelling as only a passing note.)

Suspensions are more polite, for they apologise for intruding, and are announced at the door before entering by a chord in harmony with themselves, which immediately departs on their admission.

Appoggiaturas are very rude, and enter without apology, causing at once the hardest disturbance, as if the chord, like a peaceful dwelling, had been suddenly disturbed by unceremonious visitors. All these, however, in whatever way they may have entered, are under the control of the governing note of the resolution chord, which commands them to come to him in a certain prescribed order, and all see thus made to apologise in a formal manner for their intrusion.

ESSENTIAL DISCORDS.

You may have noticed that *suspensions* and *appoggiaturas*, especially when represented by single notes, are always played together with those notes which belonged to and defined the chord of their resolution; in other words, these discords and their resolutions are considered as belonging to one root.

But when the resolution of these same discords is upon a chord whose root is a fourth above the root of theirs, it is

definite, for more complete analysis, to mention the root of the dissonant combination, as well as the root of the chord a fourth above, on which it resolves.

Take, for example, the double suspension of the sixth and fourth.

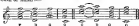


Now look at the same dissonance resolved upon a chord whose root is a fourth above:—



To discern the root of the dissonance we must remember our early rules, viz., if notes are built up on lines or in spaces the root is at the base, as in the last example: although two fifths appear, which to the eye present two roots of two triads, yet all being built up in spaces we get a chord of the seventh on root D, or sixth with the fourth inverted.

When positions of the seventh or sixth show inversions of their upper fifths into fourths, no difficulty will be found as to the true root if we trace in spaces or lines the odd numbers to the seventh or sixth:—



and the lowest of these is the true root. This class of *dissonance* is called by our teachers of harmony *essential dissonance*, which they take care to prepare, and *fundamental*, extending to the thirteenth from a dominant root if unprepared: i.e. if held by preparation, but resolved on a chord a fourth above, they are called *essential*; but if unprepared, *fundamental* from the dominant root, and resolved either into the dominant or tonic chords, or into the chromatic fundamental dissonance from supertonic or tonic roots.

My time will not allow of further particulars. It is optional, however, with the reader of this method whether he will trouble to trace separately the essential dissonance and their resolution, or call the whole progression by the root of the resolution, just as he did with suspensions. If so, he need only take the rule assigned to suspensions and substitute the word "must" for the word "may," and "above class of dissonance" for "essential dissonance." It would then read: "When two or more roots appear in essential dissonance attention may (not must) be

fixed upon the resolution chord, and call the whole progression by the name of its root.

I had intended in all my examples to have shown, in contrast to my method, the composer's manner of analysis, but the time allotted for this paper put that wholly out of question. One example, however, ought to be given.

Professor Macfarren repeats to a passage in his six lectures on Harmony, taken from the Chromatic Fantasia of Sebastian Bach.

I will mark the analysis of the composer under, and my own over the illustrations. In my method there is no need to find the key by the resolution at the end of third and fifth tones—

b B III I ♯ ♯ ♯ ♯ ♯ ♯



Key—A minor	Key—Bb	Third—A, in	Dom.—Bb	First—Bb	Dom.—A	Third—Bb	Dom.—Bb	Dom.—Bb	1st In. of A
Supertonic—C	Mediant—C	Mediant—Bb	Mediant—C	Mediant—Bb	Mediant—C	Mediant—Bb	Mediant—C	Mediant—Bb	Mediant—C
Subdominant—D	Subdominant—D	Subdominant—C	Subdominant—D	Subdominant—C	Subdominant—D	Subdominant—C	Subdominant—D	Subdominant—C	Subdominant—D
1st In. of A minor	1st In. of Bb	1st In. of Bb	1st In. of C	1st In. of Bb	1st In. of C	1st In. of Bb	1st In. of C	1st In. of Bb	1st In. of C

Composer's Method

Which looks the more simple?

The large diversity of writing the same combination of notes ought, I think, to afford thought for the purpose of considering whether or not some such method as that so imperfectly laid before you ought to be adopted, at least for beginners in the knowledge of harmony; for to such students it cannot be denied that to show how the name of the roots of chords and especially dissonances, which come modulation into other keys, must receive their names from the diatonic notes of the scale or key into which they resolve, throws shadows rather than light around the subject.

The fact that any major system chord may stand without alteration of digits as tonic to one key, dominant to another, subdominant to another; and minor second, major second, and minor sixth, as chromatic seconds, to three others—in all six keys—affords ground for such consideration.

A minor system chord may stand in five keys; dominant seventh, and its unchromatic change to the augmented sixth, five keys; inversions of the minor sixth to every key. First inversion of the major sixth to seven keys (reduced also as a first inversion of a dominant eleventh); minor thirteenth to

also keys; major thirteenth to two keys. German augmented sixth, with the enharmonic change of the sixth to a minor seventh, to five keys.

Besides these chords standing complete in various keys, we should notice that any note of any fundamental discord may remain to be a root, third, fifth, seventh, minor or major sixth, eleventh, minor or major thirteenth, of any other fundamental discord.

This large diversity of modulations, which causes uncertainty both as to key and the name of the chord, and by which the distribution of accidentals is governed, shows, I think, that the requirements of a composer for harmony analysis is far too elaborate and comprehensive for the requirements of mere readers; who need only, by the method now before you, to be able to make out a chord so as to know it again by association with the key-board. If 'repetition is the key to success,' what a difficulty is presented, even to recognise again that one chord of the diminished seventh, of which, whilst the fingers play the same four keys, the eye sees the combination as fifteen different dresses. Experience proves that a player may go on for years, and not know that the same digits have been struck under different aspects. Again, a performer's requirements are not those of a composer, for he can play without a knowledge of counterpoint, or the proper resolution of discords, why certain accidentals are used and not others, or a knowledge of musical form. All this is done for him by the composer: I draw therefore a distinct line between the requirements of a composer and those of the player.

Professor Richardson says:— 'He that hears music without the ability to discriminate its constituents, resembles not who witnesses a dramatic performance in an unknown foreign language—who may be charmed by the gestures and the elocution of the actors, and even interested in the course of the action, but, understanding not the words that are spoken, must be dead to the poetry of the work.' A profound sympathy with those who wish to avoid the disadvantage thus described, and who are trying to master the elements of harmony according to key relationships, together with a conviction that honest work will ultimately ensure success, led me to devise the method of which this paper is but an outline, and which I separate and complete for its purpose, from, may I think be helpful to the more profound and particular analysis of other writers and teachers of the subject.

* Introduction to his *Five Lectures on Harmony*.

DISCUSSION.

The Chairman proposed a vote of thanks to Mr. Rhodes.

Dr. Brown said he might be a little dense, but he could not follow exactly each rule as it had been explained. Did he understand that this was a suggestion for doing away with the ordinary thorough-bass signs and substituting these new ones, and enabling the player to play chords, without the usual thorough-bass figures?

Mr. Brown said, not at all. This did not stand in opposition to any existing method, it was a simple method for obtaining a knowledge of the same combinations from the key-board. If a chord were written in fifteen different ways, and yet it could all be chorded under one number, there was an immense advantage in the analysis, because it enabled the pupil to trace the same chord, even though it were in a new dress, and to find out under what number the chord was represented.

Dr. Brown asked in what way would the pupil be at any great disadvantage but for this method. If he played a wrong note he had only to look at the notes before him and play it right. He did not know what advantage it was to the pupil to know that the chord on the diagram was one of the three sets. He could understand it if it were meant that when he had one of these marks he was to play a particular chord, but he did not understand the pupil was to have the notes before him, and that this system would simply help him to play a right chord when possibly he might play a wrong one.

Mr. G. A. Crockett said, unfortunately he was not able to hear the first part of the paper. Of course, when there was any method to be recommended it was to be supposed that the one which took its place must possess a great advantage, and therefore he should suppose the object in the early part of the paper was to show that this method ought to be adopted by pupils, as it gave them a greater insight into the working of harmony than those treatises which they had all been accustomed to read. One observation had struck him very much, and he should like to know whether a pupil was to derive considerable benefit in composition by knowing beforehand what were the particular chords he was going to put down on paper to express particular things. Supposing he were going to write over again, 'The people that walked in darkness,' was it necessary by this method that the pupil should say—I am going to make people walk in darkness; and I know there are certain chords which show this particular darkness, the dimness, and there are certain other chords which show the daylight which was to come piercing through the dense mass. Would the pupil be benefited by knowing there were such chords which he must employ? He did not think that was possible, or that Handel when he wrote anything had the smallest idea in the world that he was making use of that

particular chord of the seventh of which they had heard so much. Mendelssohn was told one day by a gentleman, "Oh, what a lovely thirteenth you brought to them." "Did I?" he said, "I was not at all aware of it." He wanted to know whether the knowledge of these particular chords and their ramifications would assist a pupil before the mental conception of the entire thing was in his sight? When he looked at that chord III., and was told it could appear under fifteen shapes, he was glad to find that it was only there in one, and should be perfectly untroubled to imagine he was to be harassed with it fifteen times. The fact was they heard it, and did not stop exactly to know how it progressed in a piece of music, but they were charmed with it according to its outward shape.

Mr. Rogers said, if Mr. Osborn had been present at the beginning he would have seen clearly that the method was not at all intended for composers; it was simply adapted for a player to find out certain combinations under different aspects. As we have a chord represented by fifteen different distributions of accidentals, it is an immense advantage for the pupil to be able to analyse so as to class them all under one head.

Dr. Burton asked in what it was an advantage? He did not say it was of an advantage for a player to know what chord he was using, but he did not see what advantage it would be to a young pupil who knew nothing about composition, who was not studying composition, and who simply played "Home, sweet home" for the first time. He thought it would not help him very much if he knew that that one chord which he played, and probably found difficult enough standing as it did, might be presented to him in fifteen different ways. He would probably be rather alarmed lest he should have a piece containing so many awkward chords in it.

Mr. Rogers said, experience was the best teacher. He had heard it remarked often when teaching even the simple Introduction to Thalberg's "Home, sweet home," that had it not been for these numbers the pupil could not have learnt it. Moreover, in teaching without these numbers he had found a pupil troubled with that Introduction for weeks, whereas, when these were pointed out he had learnt it in a few hours, so as never to forget it. It was this practical experience which led him to devise the system.

Mr. Osborn said, he had taught that very Introduction some hundreds of times, and he thought that every pupil who was taught it could understand it in two or three minutes, not by teaching the chord at all, but just by showing how the imitations of certain phrases of the melody came in. He never had a pupil who did not understand it in three minutes.

Mr. Sturges thought the great point of Mr. Rhodes was to impress on the minds of young pupils that there were three forms for the chord of the diminished seventh. Every musician knew that there were but three cases in which the notes differed,

and, represent them as you wish, they still remained the same combination of actual sounds as the pianoforte, &c. It was a question for examination as to the number of ways in which it could be written, and no doubt he should agree with Mr. Rhodes upon it; but it appeared to him the disadvantage to the student would be this, that it would teach him to constantly select one of those three chords without having reference to the key in which it was written; and if Mr. Rhodes' system was to be considered as a perfect one for the student by doing away with three, four, five, or fifteen ways of writing the chords, and writing them universally in one way, let them have the same notation. His idea was that the main object of a notation was to convey to a musician the key position. He should be easy to see that in order to make that chord which Mr. Rhodes called I, they should write a *g* in the key of *G* minor. If No. I. were to be the only thing a student was to bear in mind, he ought always to adhere to the same notation. It was quite clear to musicians would follow that out in the key of *C* minor. It appeared to You that, even with the youngest student, you ought not to convey the impression that the fingers are to go on certain keys, but they should try to ascertain the tonal relationship of everything they attempted to play. This seemed solely applicable to keyed instruments, and he did not understand that it could be applied to the case of violin players.

Mr. Kerner said it was simply intended for keyed instruments.

Mr. Brown said, with regard to the chord of the diminished seventh, which was one of great use to musicians and was treated in a variety of ways, he thought it might at the outset enable a pupil to read those combinations with facility; but he feared it would rather divert his mind from the harmony to the mere question of this or that bit of ivory or ebony.

Mr. Bouvier thought perhaps some members had been a little hard on Mr. Rhodes, and it might be useful, as he had learned music rather later in life than usual and did not know much about it, to give his experience. As far as he knew, progress in reading consisted in the reduction of the symbols you see on a page, from a great number of separate symbols to a smaller number of more complicated ones. You get after a time to see the whole chord or passage at one time, you did not read all the notes in it, but you recognised the whole thing. When you know what all the chords were, you did not look at all notes of the chord, but you knew the chord at once. It seemed to him that something of that kind was what was desired in teaching harmony in the ordinary way. You tried to get that advantage for the pupil, and at the same time an intelligent comprehension of the subject. But there might be some who, before they were fit for studying harmony, or had time to do it, might be very much helped by its being shown to them that there were only a few limited forms of chords, and that they might carefully combine some of their elementary symbols in a rough and

ready sort of way, which would enable them to get over a good many preliminary difficulties. As he understood, Mr. Rhodes' system was only intended for beginners, to assist them in reading combinations, instead of each separate symbol by itself, and that it would be supplemented by passing on as soon as possible to the study of harmony.

Mr. Burton in reply said Mr. Stevens and Mr. Osborne had been looking at his method from a composer's point of view, which was not intended. To say that such a chord ought to be in the mind of a young composer if he meant to express darkness, or anything of that kind, was not at all his intention. The system was not intended for composers at all. The requirements of a composer were not the requirements of the player, or the mere reader, and it was to lessen the difficulties of reading he proposed this, and he found it did lessen the difficulties of reading considerably. If they could have the same intervals written forty-five different ways, but could bring them down to three, an immense advantage was gained, and he found that the pupil when he saw an extraordinary combination and could classify that as being No. 1, 2, or 3, did not need to have that constantly in mind. That was only the beginning of things. Any system whatever was but a doorway to the end. You had to bridge over to the object sought, and by increasing that constantly you found it was really a course by which you came at the object at the end of the way. Every system at first required thought, but after that method had been adopted and perfected, the method itself really became part and parcel of the object sought, and you instinctively said No. 1 or 2, without thinking about it, just the same as you see that such a combination was the common chord, without thinking about the notes. It was the same with reading type. You read a word without thinking of the letters, but beginners must think of the letters. You must have, first of all, a complete analysis, a simple method by which to get at the object, and when that was completed, the method itself seemed to dovetail into it as part and parcel of the same thing, and you did not remember the process by which your brain had led you. He wished the meeting to understand plainly that it was not for composers, but for beginners in harmony, and he had found it a practical success in his own teaching. There were some combinations for the organ which showed double flats, at which, after years of experience, he had to hesitate, simply because of the unusual distribution of semibreves; but as soon as they were placed under a given number, the difficulty vanished.

Dr. Burton asked if the numbers of these chords would be written in the music for beginners.

Mr. Rogers said, certainly.

Dr. Burton said, then in that case it was a sort of thorough-bass, a system which was now little used.

Dr. Burton did not think Mr. Rhodes' observations with regard to particular chords expressing particular things by

any more now, or Mr. Osborne's surprise at it quite justified, because many eminent men had made observations on the effect of different chords. He remembered with regard to the diminished seventh in the particular series of lessons by Professor Macfarren, which had been alluded to, one observation with regard to this chord which struck him as being rather good and amusing. He was speaking of the wonderful way in which by the diminished seventh you could modulate immediately into almost any key.

Mr. SEYMOUR: Every key.

Dr. BRIDGE: Professor Macfarren said it reminded him of the celebrated Eastern tale of the magical carpet, upon which if you stood and wished to go anywhere you were immediately transported to that place. He finished up the lecture by saying, this chord might be termed the *protoproposits* of alchemy.

Mr. OSBORNE perfectly agreed with Dr. Bridge, that the moment you had been transported to the far-distant country by the carpet, you could immediately say, 'Oh, it is by that carpet it is being done,' but not that you should say, 'I am going to get on that carpet for the purpose of transporting me there.' He hoped that Mr. Rhodes would not consider that any observations which were made were actually in opposition to his views.

Mr. SEYMOUR said, professors ought to be very much obliged to any of their number who would sit down patiently and derive any method for getting rid of any of the difficulties of teaching. If this method would do that without running any of the higher purposes of the art, he should wish it every success.

The CHAIRMAN said the discussion had very much elucidated the object of the paper, and he was sure all the members would concur in a vote of thanks to Mr. Rhodes.

The vote of thanks was then passed unanimously.

Mr. RAYNES in reply, after thanking them for their vote, said, the only object he had in view was to lessen some of the difficulties in reading, and to try and devise a method by which such combinations might be easily learned under limited aspects.

Febr. 1, 1878.

W. H. MONK, Esq., IN THE CHAIR.

THE PRESENT CULTIVATION OF SACRED MUSIC IN ENGLAND.

By CHARLES MACINTOSH, Esq., F.R.S.

It is one of the great advantages of a body established upon such a basis as that upon which the Musical Association was set on foot, that it affords an opportunity for all those who have anything to contribute to the great art work in which we are so deeply interested to cast their minds into the common treasury of plans and practices, and even if they cannot hope to add largely to the learning or the wisdom of the Association, they can still give of their best with the conviction that it will at least meet with a kind and appreciative hearing. It is with this feeling that I have undertaken to say a few words this afternoon upon the Present Cultivation of Sacred Music in England, and I shall, with your permission, ask you to look at it from three points of sight—first, at Sacred Music in the Home; secondly, at Sacred Music in the Concert Room; thirdly, at Sacred Music in Religious Worship. Beginning with the unit in our complex system of social organisation—the home and the family—I believe that the first feeling of many persons in looking at the present cultivation of Sacred Music amongst us will be that which is summed up in an old prophet's words, 'We are not better than our fathers.' And yet this factyramus view of things is, I venture to think, a mistake. We hear a good deal of the music made in the houses of our Thackerays and Austens; we conjure up in our minds pictures of families provided by Dame Nature with a ready-made quartet of vocalists, or, perhaps, if our common mother had been wondrous kind, with a double quartet; but you and I, ladies and gentlemen, must be content to accept those reports of what was done in the good old times as a part of the things read of in books, and perhaps dreamt of in dreams, but of which, by the very nature of things, we can only form an approximate opinion. When, then, we are told that the home music

of England was better three centuries ago than it is now, I would suggest that truth was higher virtue than beauty, and as no photograph has been handed down to present us with a specimen of our forefathers' performances, I would make bold to claim for ourselves a capacity for household music-making, especially on the sacred side of the art, which our ancestors never possessed. And when we turn to the music which is cultivated amongst us as we stand round the piano or the harmonium on a Sunday evening in our English homes we have little cause to be ashamed of its character. That comprehensive book of hymns and tunes effectively described as *Hymns, Ancient and Modern*, which owes its marvellous success so largely to the editorial labours of two of the most honoured members of this Association, is found on every piano, and has become one of the favourite songbooks of our households; and as we pass up a street in the busy but silent town, or in the country village where the Sunday's quiet presents a less marked contrast to the prevailing stillness of the week, it is no uncommon thing to hear the four-part harmony rising and falling, and although it sometimes occurs the critic might wish that the music were of a higher order, the fact remains that the old psalm-tune, with its motive, albeit simple harmony, and the modern hymn-tune with its delicate part-song effects, have been brought within the range of family practice. That more than this might be accomplished with the resources at our command is perfectly true, and another member of this Association, Mr. W. H. Cummings, has conceived what seems to me to be an exceedingly happy idea in his *Sunday Part-songs*, which take a middle ground between the hymn-tune and the anthem, and are calculated to be both popular and useful. We need, in fact, a fresh supply of music adapted for this particular purpose; and works of the type of old Samuel Webb's motets and antiphons, and of the simple masses, written when he held the keyboard in the *Sardinian Chapel*, Lincoln's Inn Fields, would be a pleasant addition to our too small store. If such music were available, there would be more singing than there now is in the home circle, and the weariness with which the weekly rest-day is, rightly or wrongly, regarded in so many homes would be very largely removed. Will our possession of the first which is given after some search for music of the character I have described?

But while, as I have said, the home is the soil in our social system, it finds naturally its amplification in the concert-room or the church society's practice room, just as in civil and educational matters the family is enfolded up in the parish. And in this larger area the present cultivation of sacred music seems to me to present neither lack for congratulation and for regret. The picture, in fact, has its lights and shadows, and while we have much of which we may justly boast, we have also good cause for regret, if not for reproach. In London, at least, we cannot argue for an instant that sacred music is cultivated as it should

be. We have, it is true, the great Sacred Harmonic Society with its master band and choir, and we have growing out of it those grand festivals at Sydenham in honour of the noblest master of popular sacred choral writing, George Frideric Handel; but these efforts, great as they are, and useful as are their results, contribute more to the gratification of the performers and the listeners, and to the replenishment of the catalogue, than to the enlargement of the horizon as far as the cultivation of sacred music is concerned, and the production of a new oratorio by the Society is a rare event. There is, however, a movement in the valley, the dry bones are showing signs of life, and in the concert of the recently formed choir named after the great master of Leipzig, whose name appeals perhaps more to the commoner than the multitude, we have a proof that the cultivation of sacred music in the highest and truest sense of the words is once more being taken in hand amongst us by those who have the heart as well as the hands to carry their work to perfection. That noble masterpiece, the Mass in E minor, which was the means of bringing into life the Society which has since become, and we may hope long will remain, one of the musical institutions of the metropolis, may be said almost without exception to give the churchmen who attack its difficulties more room for the exercise of honest labour than is afforded by the music of any other master, and it is no slight honour to the executive of the choir that such success has been reached in its performance. It is in efforts of this character that we must look for the improvement which it can honestly be deemed is needed in the cultivation of sacred music in the concert room, for efforts made, not for the sake of pecuniary gain, nor to do honour to a great living composer, nor to fall in with the idiosyncrasies of an eminent conductor, but simply and solely with the highest aim of which the artist is capable—to present a work of true art in the noblest possible way. But while the Bach Society has so far fulfilled its mission well and nobly in disseminating the music of the mighty dead; while it has induced persons of the highest social position and culture to give up many hours to severe drill, with a result which will doubtless prove as beneficial to their general physique as to their musical education, we owe a duty to the living; and it is a stigma upon our national institutions that music, and especially sacred music, even if it be of the highest excellence, may often pass into neglect without enjoying the opportunity even of a short-lived existence. New sacred works, as everyone knows only too well, are but rarely heard in London, and in quarters where a severe financial position might fairly induce a little enterprise it is too seldom met with, and even when it is found it is too often ill-directed. Thus you will remember that the two latest works of one who stands first among living English composers as the writer of the oratorio, and who has by his genius infused new life into that musical form which Sydney Smith said he would never listen to except under sentence of a Divine jury, were

heard for the first time, not in London but in the provinces, and were called into existence, not at the request of the oldest choral society in the metropolis, but by the energy of the promoters of our northern musical festivals; and as this applies, to give it no harder name, exists in regard to the works of those who bear the palm among their brethren, of those who are first among the foremost, it is little matter for surprise that the works of lesser hands should entirely fail to secure recognition in our midst. One result of this neglect is fatal. Not only does sacred music in the London concert room become a mere matter of routine, and the society which chiefly performs it a sort of enlarged phonograph, repeating time after time the same selection, with the same faults, and too often the same stereotyped mannerisms and defects, but the failure to encourage new workers in the field reacts upon the composer, and they naturally turn their energies into directions where they are not only more remunerative, but where at the same time they can acquire a certain sort of fame, even if it be not the highest to which they could aspire. It is in this latter sense that we must attribute the apparent barrenness of our composers. With men of the high ability, even if not absolute genius, of Professor Macdowell, Mr. Arthur Sullivan, Sir Julius Benedict, Mr. J. F. Barnett, and several other writers of considerable promise, it would be as idle as it would be manifestly unjust to assert that the creative faculty has no place in the present generation; and therefore it must be held to be painfully true that it is rather to the fact that composition is unremunerative, than to any inability to compose, that the existing dearth of new sacred music is to be attributed. A great singer can, as long as voice and health last, reckon upon a competent income, and in some few cases, upon an immense salary, while the time of a teacher of high repute may literally be said to be made up of golden hours; but when we come to the composer's prospects, the picture is at once shaded. The metropolitan societies, from which much might be expected, do not as a rule afford encouragement to composers by undertaking to purchase their works; and thus, if they elect to write, instead of devoting their energies to playing or teaching, they must look to the ordinary market of the publisher's shop as the means of disposing of their wares. The failure of this resource is only too apparent. The music-seller naturally and legitimately looks to that which will bring in a speedy profit as the most satisfactory form of investment; and as the public demands in the main works of a comparatively low class, the composer, when he obtains a remunerative engagement, is at once requested to turn his attention almost exclusively to the supply of music which experience proves will find a ready sale. To this cause must be attributed the flood of what are termed rapidly songs, the merit of which, whether as regards words or music, it is exceedingly difficult to discover, and which depend for their circulation upon the popularity won for them by

an artist who has a direct pecuniary interest in selling them, and hence in pushing their sale; and it is to this cause also that the scanty supply of sacred works fitted for concert-room performance must be ascribed. What we need, then, in order to promote such a cultivation of sacred music in the concert-room as would be thoroughly satisfactory, is not merely the establishment of societies devoted, like the Bach choir, or Mr. Henry Leslie's choir, to the performance of many of the highest choir, but also some stimulus to the composers of our day to work in a field which, as far as book-fide English writers are concerned, has had for too little labour expended upon it.

Turning from the concert-room to the third section of our subject—the cultivation of music in religious worship—I may say that I have purposely adopted this somewhat ambiguous but contented generic term in preference to employing the phrase "Church music," because in this place we know neither our own party, whether in the Church or in the State. And here at the outset we are met by one feature which is calculated to give no slight exultation and encouragement, for in the true home of the highest form of worship music—the Anglican cathedral—we have signs, which cannot be mistaken, of the exercise of serious thought among our composers as well as of the devotion of the most earnest effort on the part of gentlemen, organists, and choirs to secure a noble result in the rendering of the services. The cathedral, now no longer open to the sneer of the cynic who compared it to a shellfish inhabited only by its claws, is once more the home of high artistic effort, and we can in the mother church of this great city boast of a celebration of the chief Christian service which is not only thoroughly English in its spirit and its design, but which is also as near perfection in its rendering as we could well imagine. Those who think of what is now and what hath been may well marvel at the result, and without suggesting any comparisons, which would in this case be not only worthless but unjust, when we contrast the resources of the past with those of the present, it is not too much to say that the service is at last worthy of the building. At Westminster again, at the old collegiate church, there is evidence of a steady movement upward and onward, and it must be a matter for congratulation that when our brethren from the country visit us they are no longer able to assert that they can meet our London choirs. In these noble buildings the orchestra has once more found its fitting home, and such services as those which have been celebrated during the past month under the direction of Dr. Stainer and Dr. Bridge, are ample evidence that, where labour has been needed it has been supplied, and—can I say less? I could not say more—*Plena crescit ætas*. When the cathedrals are thus leading the way—and in the provinces there is the same gratifying progress to record—we have a right to ask that there shall be at least a corresponding movement in our parish churches; and in this respect it becomes

difficult to substantiate the remarkably small progress which has been made of late years in a quarter where we might have expected to find the most marked advance—I refer to worship-music so far as the congregational development is concerned. In saying this I am of course perfectly aware of the fact that so-called choral services are becoming more and more prevalent every day, that books of hymns, tunes and chants with harmonies more or less correct are being continually issued from the press; but, all these signs to the contrary notwithstanding, it is open to demonstration that the lamentable is, as far as music is concerned, comparatively unknown in nine-tenths of our ordinary church services, and that cacophony prevails. Chorus we have in abundance, it is true. Young men and maidens on the one hand—according to the prescription of Dr. Hallam and other defenders of the holy diocetars, whose only resting-place will shortly be found amongst Protestants, as they have been excluded by Archbishop Manning from the Roman Church—are still located in our galleries, while small boys with the pale faces and treble voices beloved by Mr. Holman and other authorities, are on the other hand to be seen within the chancel; but the evil remains untouched, and not infrequently the superiority of the performance either behind or before the congregation, as the case may be, only serves to show up in more striking contrast the ugliness of the people's song, which remains almost the same as in times past. Thus, although the assertion of Mr. St. John Tyrwhitt, in his admirable lectures on 'Christian Art and Symbolism,' that our life is a struggle against ugliness, still holds good, unfortunately in the very place where men might naturally expect to find some aid and help in the warfare, they are too generally met with a dead level of what, if it is not absolutely hideous and effeminate, is at any rate far removed from the standards of the artistic.

Whether this state of things is a necessary evil which must be endured and cannot be remedied is a matter well worthy of consideration, for as the number of those who believe in the holiness of ugliness is steadily diminishing every day, and art education is increasing, it cannot be denied that the continued existence of the present style of what is politely termed congregational singing must tend needlessly to distract and disturb those 'who have ears to hear,' if it does not altogether repel them from entering the doors of a church. Even ugliness in the pulpit, the stained glass in the windows, and the perbivious of architectural details in the building itself, cannot atone for the direct attacks made upon the tympanum, which result in the creation of a mental condition very unlikely to conduce to devotion or reverence.

In the necessary first conference of the unpleasant condition of affairs to which I have alluded I do not believe, and, as it seems to me, the remedy is within reach. That a voice of ordinary quality and as our for music sufficiently acute to prevent its possessor from singing too flat or too sharp—the latter fault

being just as painful if not as common as the former—are undeniably shared by the majority of educated people, is an acknowledged fact, and the solution of the difficulty is therefore supplied in the words of the old adage, that 'where there's a will there's a way.' If people in general could be induced to give the smallest amount of consideration to 'music in church,' if they would devote but a brief time during the week to its practice, and make up their minds to sing quietly and usefully during the public services, the result would soon be apparent, and men who at present adopt the laissez faire attitude during the musical parts of public worship would wake up to the fact that they are at least worthy of notice. That it is possible to induce an ordinary middle-class congregation to take sufficient interest in the music to enable them to join in it with decent effort, and even to sing in harmony, may be proved by a visit to Union Chapel, Islington, where Nonconformity has done what Churchmen have either never attempted, or at least have failed to accomplish; and if this can be done in Islington, it can scarcely be deemed impossible elsewhere under more favourable auspices.

When the trial has been made fully and fairly without success, I shall be ready to admit that the atmospheric miasma which at present so largely prevails under episcopal sanction and clerical approval is really the only form of musical service to be obtained, but until then I must decline to believe it. At the present moment, as it seems to me, the music of the Church regarded congregationally has been grossly neglected, while reform in all other respects has been carried out—sometimes to an extreme which is little better than the original evil. People have been preached into more frequent attendance at church, they have been induced to relax their piano-strings for the removal of galleries, the opening out of ancient roads—we was recently relieved of forty tons of plaster, laid on by successive generations of churchwardens—and for other useful and needless work involved in what is popularly known as church restoration and church decoration; but while the fabrics have thus been beautified, and even, no doubt, have been robbed of their choicest blossoms to ornament the manse, a most important part of the whole matter has been neglected. On all other points not only intelligence, but artistic taste has been bestowed, but the song of the people, which must be brought out if the service is to be anything more than the barren and stark dress of the old puritan days, or the flowerless worship of priest and choir of modern Roman ecclesiasticalists, has been allowed to remain uncultivated. That this is no imaginary grievance, but a serious hindrance to the progress of art and religion, might easily be proved by a reference to the impression produced even on mere auditors by the harmonious singing of a great multitude, and the consequent loss where such a 'valued' is absent. The description of the magnificent effects of the psalmody at Paul's Cross in the Elizabethan era are familiar to all who have examined the

subject; and in our own day no one can fail to have been struck by the indescribable thrill which is caused by listening to the singing of one of the great choirs of a thousand or more of voices, collected at the annual festivals of the diocesan choral unions in our great cathedrals. On these latter occasions the voices, it is true, are drawn from choirs, not from congregations, and even to a certain extent "picked," but then it must not be forgotten that the choirs in turn are made up of members of the ordinary church-going population, and thus that what training has accomplished in the one case can, it may fairly be argued, be attained in the other.

Of course, in proposing any scheme for improvement with regard to the cultivation of this great part of our musical art, it is best to be practical, and therefore I would offer one suggestion—which has, in fact, already been made by Dr. Hullah—that we should utilize the parish and its machinery, that musical education should be introduced into our schools, not as it is now, merely as a matter of singing by rote, but as a matter of singing by note. A great man amongst us—or at any rate one who has made for himself a certain reputation, Sir Henry Cole—is, I believe, occupying his retirement from the Civil Service in travelling in different parts of the country with the simple view of stirring people up to do this work. Where he can, he engages a brass band, as he did some years ago, if I recollect aright, in a church at Brompton, and he gathers together a congregation by announcing that there will be an accompaniment of brass instruments in addition to the organ. By this means he stimulates curiosity, and then proceeds to work on the interest he has excited. But whether we follow Sir Henry or not, I am convinced that Dr. Hullah is in the right when he says that the only way of making England really musical is to make music obligatory as music in the primary schools of the country. He has, I have every reason to believe, suggested this to the Committee of Council on Education in a memorandum which has not yet found its way into the blue book, because I imagine the Council do not see their way to carry out his views, nor can they show cause why they should fail to do so; and therefore they have probably used a wise discretion in keeping the public in the dark as to their inspector's scheme. I do hope and, from recent meetings which I have attended, where educationalists have been very much to the fore, I believe the day is coming when England will demand that in her schools which are selected by grants from Imperial income, music shall be taught to some purpose. As present, it may not be known to all the members of the Association, but it is a fact, that a very large second entry is made out of the education vote for what is called the teaching of music, and yet, as Dr. Hullah would tell you, the music in all our national schools is, unless the master chooses of his mere free will to make it otherwise, really and truly nothing more than the singing of a number of

songs by ear. If, on the other hand, the great were made dependent on instruction either in the vocal sol-fa system or the old notation—and the Government, I think, in these matters is very wise to be even-handed with regard to both systems, aiming only at results—if such instruction were made the condition of a good substantial grant which would be appreciated by masters and mistresses, we should arrive at a very different state of things. Such a reform, if carried out earnestly and heartily, would be a contribution towards the cultivation of sacred music as far as the poor are concerned, and when we have worked through the lower stratum of society there need be very little fear but that we shall soon reach the upper. And as regards the higher ranks of society, we have signs that musical cultivation of this sort is not being neglected. We have our two music schools and three or four little solitary institutions all working in the right direction, and although they are not exclusively cultivating sacred music, they are, of course, preparing the basis on which it can be cultivated.

There is one other suggestion which I think may be made as regards the cultivation of sacred music, and it is for the use of churches not simply for the purpose of worship but for the useful purpose of musical practice. There seems to be in England a sort of conception that a church is too sacred to be used for anything else than praying and praying at prescribed times. Why churches should only be so used is a mystery which it is difficult to fathom. I heard the other day of a case in which the Bishop of Manchester had given permission to a Diocesan Inspector of Schools to use one of the large churches in Manchester virtually as a lecture room. He was, of course, only using it for a lecture on kindred and named subjects, but if a church may be used as a lecture room it is difficult to see why it should not be used as a practice room for sacred music, and with due reverence, order, and decency, such a use might very much conduce to the cultivation of the art of which we are speaking. If people were assembled at certain intervals with a definite programme, with music books arranged for practice, and if some qualified person were to stand forward and lead them—and there is no reason why a man should not best time with his hand as well as gesture with his mouth—we might arrive far nearer than we are at present to the end we desire. Some such effort has been made, and the direction of Westminster Abbey as a great musical centre has been placed upon it, in what are called *services of song*. Now these little services of song, although they are very laudable in their way, are nothing more nor less than an imitation of the old form of services which we are told was sung in St. Philip Neri's Oratory at Rome. They consist of narratives and Scripture stories interspersed with well-known hymns. Some one reads the narrative, the choir is there to sing the hymns, the book of music is in the hands of everyone able to join, and the result may easily be imagined. I am told that in Nonconformist

places of worship all over the country such choral services are becoming increasingly common, and only as recently as last Sunday, at Kewst Hall, Mr. Parsons, the professor of music at Harrow School, who has done a great deal for musical education among the upper classes, brought forward what he called an *oratorio*, in which although he did not quite follow out the idea I have suggested, because instead of using well-known hymns and tunes he simply took the hymns and used them for his own purpose, yet still the framework was the same and the hymns formed the staple of the work. I do not know whether you noticed in the newspapers that in describing the performance the critics or reporters fell into the not unusual error of talking of the audience as the congregation. If we could get congregations or audiences, call them which you like, to take up the practice of sacred music in this popular, simple, and elementary way, we should be doing something to forward the study of those great works of the German master whose music has recently been introduced at St. Paul's, at Westminster, and at Eton, and instead of seeing a vast multitude standing silent or half silent, or uttering sounds which are the reverse of pleasant, we should find them by degrees taking up and swelling the great body of song.

I am conscious how very imperfectly I have treated this subject, and my time has not allowed me to refer to many points, such as the growth of a modern school of Church composers, on which I should have liked to touch; but, as I told you when I commenced, it was really only to offer a humble contribution to the treasury of the Musical Association that I come here to-day, and if I have said one or two words which may suggest some weightier thoughts and weightier responses from the gentlemen around me, I shall be amply rewarded.

Mr. G. A. QUINCEY proposed a vote of thanks to Mr. Martineau. He felt sure that everyone present had thoroughly enjoyed the paper he had read. The ideas thrown out would be, through the means of different channels, widely disseminated, and he hoped a good harvest might be reaped from the seed now sown. The resolution was seconded and carried unanimously.

Major M'Cune said there was one difficulty which Mr. Martineau had not touched upon. In order to have good congregational singing the poor system must be thoroughly broken up, if you were to accomplish harmony among the congregation. It must strike anyone with a tolerable knowledge of music, on going into a church, what an immense difficulty there was, unless he had a tenor voice, in joining in the music. Persons like himself who possessed a 'basso-profundo' voice had only the option of trying to sing in a very wild way by leaving out part of the tones, or else singing two octaves below the proper pitch. If, on the other hand, they heard a very bass in one corner and a very alto in another, they would be looked upon by those in the immediate vicinity as a local nuisance.

Mr. C. E. SEXTON thought there were two main difficulties in the way of carrying out the admirable suggestions of Mr. Mackenzie—the one local, the other general. The local difficulty was that in choirs made up of voluntary singers it often happened that they had to deal with persons wholly incompetent; but supporters of churches, contributors to the funds, and so on, expected certain considerations in return, and unfortunately one was a seat in the choir. He remembered such a case in a church where he was organist for some time, where there was a gentleman who fancied he could sing tenor. He had not the least notion of reading music, but he happened to have a gentleman on either side of him who could sing tolerably correctly, and he managed to follow them pretty well. But after a time they fell off and he was left alone, and then he did nothing but sing the melody, and when informed of it simply said, 'I cannot hit that tenor part to-day.' The general difficulty was this, that if parties were willing and anxious to assist in the service, and possessed certain voices, they must, in order to make effective use of them, be checked, and could not be allowed to sit indifferently, as was now the practice. Major McCrea had spoken of that as a difficulty, because to have a 'tenor' in one part and an 'alto' in the next one, three or four 'basses' in another, and a 'treble' in another, was not a classification of voices which would tend to a satisfactory result. Then came the great difficulty, Could they in churches chiefly sing and turn the whole congregation into a choir? He feared that would be a difficulty, unless they adopted unison singing, which would favour, perhaps, the Gregorian style of service. Confining themselves to what was more general, to the more Anglican form of service, it would be simply impossible to have it sung in unison with anything like effect.

Major McCrea thought the only way out of the difficulty would be to have some parts of the service sung in unison, which would afford a scope for those who felt disposed to sing; but he did not see how they could get over this difficulty entirely. He himself, and others like him, had sung in choirs for many years, and he supposed was up to a sort of average, but as a member of a congregation he considered himself utterly useless.

Mr. SEXTON asked if the voices were separated in Dr. Allen's congregation.

Mr. MACKENZIE: No; the people sit where they like.

The CHURCHMAN said he quite agreed with Mr. Mackenzie in the points laid down. For example, as to the great need, not only for the cultivation of Church music, but for the general improvement of the English people in the art, and that it should be made a matter of much more importance in primary schools. But this was by no means a new proposition. Nearly thirty years ago he began to work with Dr. Hullah in the practical exposition of such an experiment, on the system brought into this country by him. It was introduced under the immediate

superintendence of the Committee of Privy Council on Education, and had been before the public ever since. Whether the effort had been properly supported by the Government was another thing. The grant now stood in this way. At the periodical examination of primary schools the inspector had the power of returning the grant (which partly went into the pocket of the teacher), for all children who were in the music class. Dr. Hullah's contention—and a very proper one—was, that this musical education should be tested, because at present it seemed to fall generally into the useless channel of the children learning a few songs, which they were allowed to sing in the inspector's presence, who very often possessed no knowledge of music. For this should be substituted a *bona-fide* examination into the real musical results. He believed the musical grant to primary schools for music averaged about £25,000, which was a large sum in the aggregate, but it was simply awarded in the various schools, so much to each child who could stand up and sing so many songs, which seemed a very useless way of expending money. He also agreed most thoroughly as to the necessity, if you were to make any great improvement in the performance of sacred music in churches, for the voices to be separated. He had been for twenty years cognizant of a church in which the voices were separated—that is to say, so far as the separation of the sexes was concerned—and he could bear witness that that separation seemed greatly to promote what was called congregational singing. Some such division, he conceived, was absolutely necessary as the first step, and the second, no doubt, was to bring into operation some such plan as had been adopted at Dr. Allen's chapel. The history of the musical movement in that chapel was this: First of all, Dr. Allen was a musical man—at every rate, he was a very good judge of music—and he had published several collections of sacred music, which were used in his own chapel and also very extensively in America, and to which too much praise could not be given. In this collection he had been assisted by the late Dr. Gosselt, who was for many years organist of the chapel. Next, the circumstances had been exceptionally happy, in the presence of a large number of persons who could read music, many of them, as it happened, having formed part of the first Upper Singing School taught in Exeter Hall by Dr. Hullah thirty years ago. A great proportion of the congregations were sufficiently well able to read music to feel an interest in providing themselves with the necessary books, and in many cases to join in "four-part" harmony. Amongst other things, Dr. Allen provided an anthem book for the congregation, a collection of a somewhat simple style, beginning with Purcell's "Lord, for Thy tender mercies' sake," and going on to such pieces as a movement from Handel's *Coronation Anthem*. The same thing had been done, to his own knowledge, by a body of persons who, one would think, were the least likely to have reached such a point, namely, the Scotch Presbyterians. They had published an anthem book and a chant book, in which were

included not only the Psalter, but every possible passage throughout the Bible which could be put into anything like musical metre, all marked for chanting. This was sung without the assistance of an organ; but in the Allen's chapel they had a very fine instrument. A great distinction was to be made between ordinary congregational music and that styled 'four-part' music which they all liked to hear; but, with regard to this, the introduction of such an experiment as the performance of Bach's 'Passion' music as frequently as we now had it in our cathedrals had been very suggestive to congregations. He had been present at the performance of the 'Passion' music at St. Paul's this year, after being absent two or three years, and was very much struck with the quality of congregational sound which arose when the chorals were sung. It seemed to be now understood that the chorals formed the people's part of the service. With regard to the proposed division of voices, the real difficulty lay in what was called the 'poor system,' and here one came upon a feature of Church life which was almost peculiar to this country—family life married into church—the members of a family all liking to worship side by side. On the other hand, his experience of the church he had referred to seemed to show that where the separation of the sexes was carried out, great collateral advantages had arisen, as, for example, in the greater facilities it gave to the young ladies of a family to go to church when they knew that they should be immediately surrounded by their own sex only; and he thought there was something of a similar feeling on the men's side too. With regard to musical composition for the Church, Mr. Mackenzie had said nothing. It had often struck him that we were now enjoying the fruit of very much greater industry on the part of Church composers, for the number of works produced within the last ten years must be enormous, and for the most part in a masculine and worthy Church style. There was, of course, running collaterally with the demand, new so common, for what was called 'hearty' congregational singing, a desire for music which should be of a masculine, solid, and not too complicated a character, and they saw in the efforts made to provide music of that sort how difficult it was to write simple music. Take as an instance the anthem by Farwell, just now mentioned—where was there another like it? You might set half-a-dozen church musicians to write each a one, and they would all say it was a difficult thing to do. He also it was difficult to write a psalm tone; there was a temptation on the one hand to make a psalm-tune which was only tolerable with a quartet choir, or on the other side, to simplify until you came to a style which had been sometimes called that of the 'last century' in cathedral and church music, in which, certainly, simplicity and not scientific composition was the solvent and the weak point.

Mr. Mackenzie said the chairman had dealt with almost every point which he had left untouched, having especially spoken of

Dr. Allen's chapel, and answered the question that had been asked. But he must, with all due deference, express some doubt whether congregational singing in church where the sexes were mixed was such an impossibility. He heard something like it the previous morning at St. George's-in-the-East—a large church with an immense choir. The people were all sitting together; he was in the gallery, and a body of harmony rose up in a very agreeable way, although fathers, sisters, mothers and brothers were all sitting together. Of course their powers were of the average height of the present day. He should be very sorry to give up the problem simply because ecclesiastical taste did not lead people to separate the sexes. As regarded Dr. Allen's chapel, all the chairman had said was exactly in accordance with his experience there; they had been exceptionally fortunate, but he maintained that there were numbers of churches in London which were just as exceptionally fortunate where nothing whatever was done, and he intended Dr. Allen's as a place where anyone could go and see for himself what might be done. He contended that if it was done in one place it might easily be done elsewhere. Lastly, his conclusion in favour of the Church composers of the present day arose simply from want of time.

